



Engineering +  
Environmental

March 24, 2014

University of Washington  
Environmental Health & Safety  
Mr. John Wallace  
Box 354110  
Seattle, WA 354110

Re: **UW 203512 - Maple Terry Hall - PCB Cleanup Verification Sampling Plan**  
PBS Project No. 40035.590

Dear Mr. Wallace-

At your request, PBS Engineering & Environmental, Inc. (PBS) is providing this summary of the proposed site cleanup verification sampling plan to be implemented at the Maple Terry Hall project site at the University of Washington (UW), UW project number 203512.

#### Background

Terry Hall experienced a PCB-laden oil spill in and near the Basement Level Electrical Transformer Room sometime in the late 1960's. In the early 1990's, Dames and Moore conducted an investigation and remedial action, which determined that PCB oil had leaked to the perimeter of the Transformer Room (approx. 21' x 15') where it penetrated the expansion joint in the concrete and affected soils below. The remedial action implemented at that time generally consisted of removal of a "ring" of the concrete floor and the base of the concrete walls at the perimeter of the Transformer Room, cleaning and scarification of remaining concrete and encapsulation of scarified areas. The electrical transformer was replaced at some point subsequent to the leak/remedial action. PCB-contaminated concrete and soil remain at the building, and are to be removed to facilitate demolition of the existing Terry Hall and its subsequent replacement.

#### Characterization/Remediation Scope

PBS has relied on the previous characterization completed by Dames and Moore and has conducted additional sampling as feasible to confirm conditions since the time of the remedial action in the early 1990's. Due to access restrictions and the inability to advance borings within the Electrical Room, PBS' sampling has consisted of additional concrete cores and soil borings at the east and south perimeter of the Transformer Room coupled with recent concrete cores both through the Transformer Room pad and slab, and the concrete slab outside the Transformer Room to the north, south, east and west. Data is presented in both the Dames and Moore documentation attached and the PBS figures attached. Refer to Figure 1 for previous sampling points from both the PBS and Dames and Moore investigations.

Due to access restrictions described above, and on-going operations in the building, no additional site characterization data is available. PBS plans to verify the extent of contamination in conjunction with cleanup verification sampling to be performed in compliance with 40 CFR Part 761 Subpart O, which is discussed below

PBS has developed a scope of remediation based on available data, which suggests that both concrete and soil within the Transformer Room have been impacted by PCB, while only concrete outside the perimeter of the Transformer Room has been impacted. No PCBs have been detected in soil outside the Transformer Room to date. Remediation will generally consist of removal by excavation of PCB-contaminated concrete in the areas surrounding the Transformer Room, along with excavation of both PCB-contaminated concrete and soil within the footprint of the Transformer Room.

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Initial soil removal will extend vertically to approximately 5 feet below the transformer room floor, and laterally to approximately 0.5 feet beyond the Transformer Room perimeter as a precautionary measure. The scope of remediation includes the excavation and proper disposal of approximately 270 tons of PCB-contaminated concrete and soil. Refer to PBS' Figure 1 for information on the extent and layout of planned remediation by excavation.

The University of Washington has contracted with W. G. Clark Construction Company of Seattle, Washington as General Contractor and their Sub-contractor City Transfer Inc. (CTI) of Sumner, Washington to complete the specified remediation. A Contaminated Media Management Plan and associated Health and Safety Plan from CTI have been reviewed by PBS. Review comments have been provided for revisions and the two documents will undergo a final review for specification compliance prior to remediation work proceeding.

Please note that in order to simplify site operations during remediation the University of Washington is authorizing the excavation and disposal of all PCB-contaminated media as "TSCA" level waste (>50ppm), which is to be transported in DOT approved containers with appropriate waste tracking documentation to the Chem-Waste NW Subtitle "C" landfill in Arlington, Oregon. Waste profiling has been initiated and it is our understanding based on your information that initial acceptance from Chem-Waste NW has been received.

#### Site Cleanup Verification

PBS will observe all aspects of the planned remediation work and will, on the behalf of UW, perform site cleanup verification sampling in compliance with 40 CFR Part 761 Subpart O. The attached Figure 1 shows the remediation area overlain with a 1.5 meter grid and with proposed cleanup verification sampling points for both concrete and soil.

Soil cleanup verification sampling will consist of the collection of approximately forty-two (42) discrete "grab" samples that will then be composited into five (5) separate samples representing areas of inference consisting of each of the four sidewalls and the floor of the excavation. This is intended to better facilitate identification of any specific areas requiring over-excavation to meet soil cleanup requirements (<1ppm), and to focus any over-excavation that may be required.

Soil samples will be composited per 40 CFR 761.289, either mixed in the field or at PBS' Seattle office, with the composite sample from the excavation floor being considered the "initial" compositing area. The other four composite samples to be collected will serve as subsequent compositing areas representing each of the sidewalls. Composite samples collected from the north and south sidewalls of the excavation (approx. 26'-6" x 5') will consist of up to nine (9) discrete "grab" samples at each sidewall. Composite samples collected from the east and west sidewalls of the excavation (approx. 17' x 5') will consist of up to six (6) discrete "grab" samples at each sidewall.

Samples will be assigned a unique identification number and transmitted to Fremont Analytical in Seattle, Washington for analysis by EPA Method 8082 for Polychlorinated Biphenyls by Gas Chromatography. Samples will be analyzed on a rush basis to expedite remediation activities. Any of the composite samples described above being reported as containing >1ppm PCBs will trigger over-excavation of the corresponding area of inference, consisting of the compositing areas described above. PBS will recommend over-excavation initially of up to 3 feet of material from the entire extent of the excavation floor or any corresponding sidewall. Following over-excavation PBS will conduct similar cleanup verification sampling using a 1.5 meter grid.

#### Depth to Groundwater

Information provided by GeoEngineers in their Phase II ESA for the New Maple and Terry Hall Site dated May 25, 2012 indicates that based on water level measurements in nearby wells located approximately 50 to 100 feet from the PCB remediation area, depth to water is estimated at approximately 15 to 20 feet below the parking garage slab. As such, no groundwater is anticipated to be impacted by planned remedial excavation.

PBS will prepare a remedial action closure report for your use following completion of the remedial activities described above.

Please don't hesitate to contact our Seattle office should you require any additional information.

Sincerely,  
*PBS Engineering and Environmental, Inc.*



Tim Ogden  
Principal / Sr. Project Manager

Att. (4): PBS Figure 1 – PBS Cleanup Verification Sampling Diagram

PBS PCB Sampling Data, 2013

PBS PCB Sampling Data, 2014

Excerpts from *Final Report – Proposed PCB Remediation in the Terry-Lander Transformer Vault*, Dames & Moore, 1993

Cover page

Executive Summary

Figure 1 – Site Location Map

Figure 4 – Concrete Core Samples in Mechanical Room

Figure 5 – Soil Samples at Cores in Mechanical Room

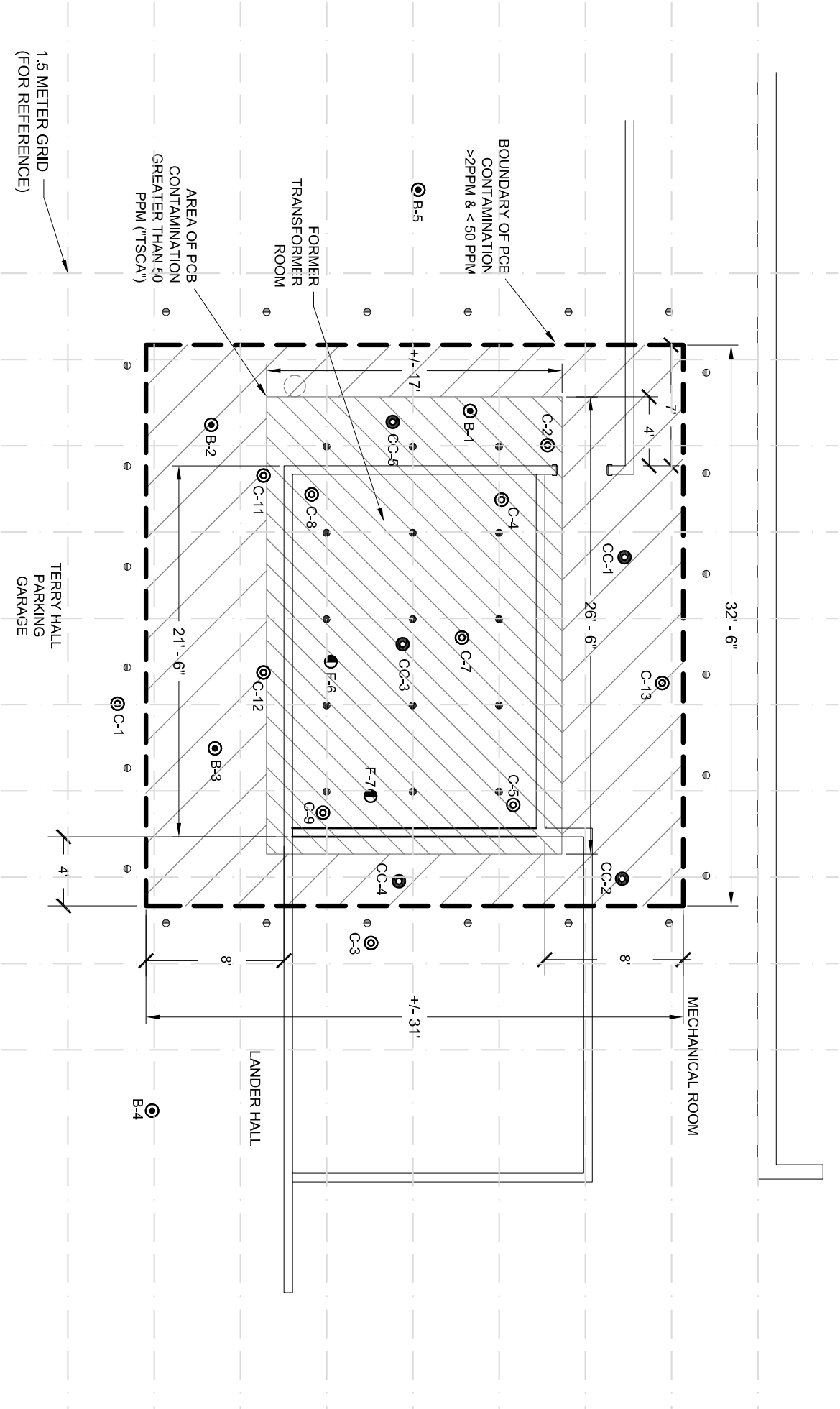
Appendix D – Laboratory Analytical Results and Chain of Custody

Excerpts from *Final Remedial Action Closure Plan*, Dames & Moore, 1995

Cover page

Executive Summary

Figure 6 – Transformer Area Floor Plan



1 REMEDIATION AREA DIAGRAM  
SCALE: 1/8" = 1'-0"

**LEGEND**

- CONCRETE AND SOIL WITH PCB LEVELS >50 PPM
- CONCRETE WITH PCB LEVELS >2 PPM >50 PPM
- ESTIMATED EXTENT OF POTENTIAL PCB CONTAMINATED MEDIA
- C-1 VERTICAL CORE NUMBER AND LOCATION (DAMES AND MOORE - 1991)
- F-1 VERTICAL CORE NUMBER AND LOCATION (UNISON - 1990)
- B-1 CONCRETE CORE AND BORING NUMBER AND LOCATION (PBS - 7/15/13)
- CC-1 CONCRETE CORE AND BORING NUMBER AND LOCATION (2/2/04 - ANALYSIS PENDING)
- SOIL CLEANUP VERIFICATION SAMPLE
- CONCRETE CLEANUP VERIFICATION SAMPLE

PCB SAMPLE RESULTS (2013)			
LAB SAMPLE ID	CLIENT SAMPLE ID	TPH-DX RESULT	TOTAL PCBs
1307071-001	B1 CONCRETE	NA	0.581
1307071-002	B1 15"-20"	<20	<0.1
1307071-004	B2 CONCRETE	NA	1.53
1307071-005	B2 15"-20"	<21	<0.099
1307071-007	B3 CONCRETE	NA	22.1
1307071-008	B3 18"-22"	<21	<0.1
1307071-009	B3 40"-44"	<20	<0.098
1307071-010	B4 CONCRETE	NA	0.210
1307071-011	B4 20"-24"	<21	<0.1
1307071-012	B4 40"-44"	<19	<0.090
1307071-013	B5 CONCRETE	NA	<0.097
1307071-014	B5 18"-22"	<20	<0.090

PCB SAMPLE RESULTS (2014)		
LAB SAMPLE ID	CLIENT SAMPLE ID	TOTAL PCBs
1403091-001	CORE 1 (NW) CC1	<0.102
1403091-002	CORE 2 (NE) CC2	1.37
1403091-003	CORE 3 (CENTER) CC3	0.124
1403091-004	CORE 4 (E) CC4	32.3
1403091-005	CORE 5 (W) CC5	516

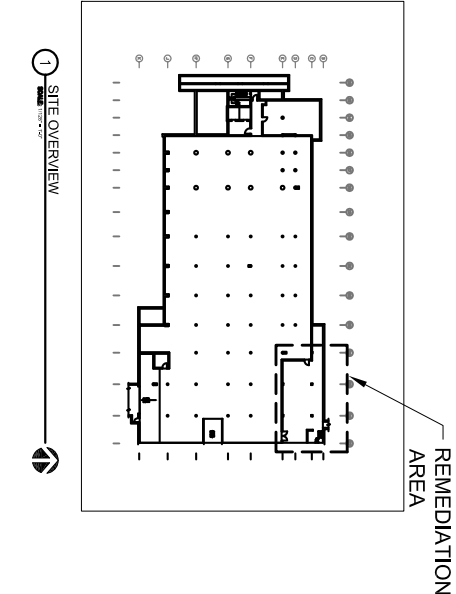
RESULTS IN MILLIGRAM PER KILOGRAM (mg/kg)  
<0.1 = NOT DETECTED ABOVE LABORATORY REPORTING LIMIT  
NA = NOT ANALYZED

NOTES

- PCB CONTAMINATION HAS BEEN IDENTIFIED AT THE AREA OF WORK RESULTING FROM A TRANSFORMER OIL SPILL IN THE 1960s, WHICH WAS CHARACTERIZED BY DAMES AND MOORE IN THE EARLY 1990s. SUBSEQUENTLY AN INTERIM SITE CLEANUP WAS PERFORMED, CONSISTING OF REMOVAL OF CONCRETE AT THE PERIMETER F THE TRANSFORMER ROOM, SCARIFICATION OF THE UPPER SURFACE OF CONCRETE AND ENCASULATION. PCB CONTAMINATED CONCRETE AND SOIL REQUIRE REMOVAL TO FACILITATE DEMOLITION OF THE EXISTING BUILDING.
  - SOIL CLEANUP VERIFICATION SAMPLING WILL CONSIST OF COLLECTION AND ANALYSIS OF A TOTAL OF FIVE (5) COMPOSITE SOIL SAMPLES, CONSISTING OF THE FOLLOWING DISTRIBUTION OF FORTY-TWO (42) SEPARATE DISCRETE SAMPLES:  
  
COMPOSITE SAMPLES:                      # OF DISCRETE SAMPLES  
1 - EXCAVATION FLOOR:                      12 DISCRETE SAMPLES  
2 - NORTH SIDEWALL:                      9 DISCRETE SAMPLES  
3 - SOUTH SIDEWALL:                      9 DISCRETE SAMPLES  
4 - EAST SIDEWALL:                      6 DISCRETE SAMPLES  
5 - WEST SIDEWALL:                      6 DISCRETE SAMPLES
  - CONCRETE CLEANUP VERIFICATION SAMPLING WILL CONSIST OF COLLECTION OF APPROXIMATELY TEN (10) DISCRETE SAMPLES FROM EACH SIDE OF THE REMEDIATION ZONE AT EDGE OF CONTAMINATED CONCRETE, FOR A TOTAL OF APPROX. TWENTY-FOUR (24) DISCRETE SAMPLING POINTS, TO BE COMPOSITED INTO ONE (1) SAMPLE PER "EDGE" (e.g. N, S, E & W).
  - IN THE EVENT DATA INDICATES PCB CONCENTRATIONS ABOVE 1 PPM IN ANY OF THE COMPOSITE SAMPLES OUTLINED ABOVE, ADDITIONAL EXCAVATION OR CONCRETE REMOVAL WILL BE PERFORMED AT THE CORRESPONDING AREA (CONCRETE ZONE, EXCAVATION FLOOR OR SIDEWALL). SUBSEQUENT VERIFICATION SAMPLING WILL BE PERFORMED IN A SIMILAR FASHION AS INITIAL VERIFICATION SAMPLING, WHICH WILL INCLUDE COLLECTION POINTS ON APPROXIMATELY A 1.5 METER (+/- 5.8 FEET) GRID.
  - ALL PCB CONTAMINATED CONCRETE AND SOIL WILL BE EXCAVATED AND DISPOSED OF AS "TSCA" LEVEL WASTE FOR DISPOSAL AT CHEM-WASTE MANAGEMENT'S SUBTITLE "C" LANDFILL IN ARLINGTON, OREGON.
  - DEPTH TO GROUNDWATER IS ESTIMATED BY GEOENGINEERS IN THEIR PHASE II ESA REPORT FOR THE NEW MAPLE AND TERRY HALL SITE, DATED MAY 25, 2012. TO BE 15-20 FEET BELOW THE LEVEL OF THE PARKING GARAGE FLOOR SLAB. AS SUCH NO GROUNDWATER IS ANTICIPATED TO BE IMPACTED BY PLANNED REMEDIAL ACTIVITIES.
- SEE LEGEND FOR APPROXIMATE VERIFICATION SAMPLE LOCATIONS.

**PBS**  
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PCB CLEANUP VERIFICATION SAMPLING DIAGRAM  
MAPLE TERRY HALL - UNIVERSITY OF WASHINGTON - 203152  
SEATTLE, WASHINGTON





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**PBS Engineering & Environmental**

Tom Mergy  
2517 Eastlake Ave, E #100  
Seattle, Washington 98102

**RE: UW Terry Hall**

**Lab ID: 1307071**

July 18, 2013

**Attention Tom Mergy:**

Fremont Analytical, Inc. received 15 sample(s) on 7/15/2013 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.  
Polychlorinated Biphenyls (PCB) by EPA 8082  
Sample Moisture (Percent Moisture)***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Michael Dee  
Sr. Chemist / Principal



Date: 07/18/2013

**CLIENT:** PBS Engineering & Environmental  
**Project:** UW Terry Hall  
**Lab Order:** 1307071

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1307071-001	B1 Concrete	07/15/2013 9:00 AM	07/15/2013 11:45 AM
1307071-002	B1 15-20"	07/15/2013 9:10 AM	07/15/2013 11:45 AM
1307071-003	B1 40-48"	07/15/2013 9:15 AM	07/15/2013 11:45 AM
1307071-004	B2 Concrete	07/15/2013 9:55 AM	07/15/2013 11:45 AM
1307071-005	B2 15-20"	07/15/2013 9:25 AM	07/15/2013 11:45 AM
1307071-006	B2 40-44"	07/15/2013 9:30 AM	07/15/2013 11:45 AM
1307071-007	B3 Concrete	07/15/2013 9:50 AM	07/15/2013 11:45 AM
1307071-008	B3 18-22"	07/15/2013 10:05 AM	07/15/2013 11:45 AM
1307071-009	B3 40-44"	07/15/2013 10:10 AM	07/15/2013 11:45 AM
1307071-010	B4 Concrete	07/15/2013 9:50 AM	07/15/2013 11:45 AM
1307071-011	B4 20-24"	07/15/2013 10:20 AM	07/15/2013 11:45 AM
1307071-012	B4 40-44"	07/15/2013 10:25 AM	07/15/2013 11:45 AM
1307071-013	B5 Concrete	07/15/2013 10:14 AM	07/15/2013 11:45 AM
1307071-014	B5 18-22"	07/15/2013 10:35 AM	07/15/2013 11:45 AM
1307071-015	B5 40-44"	07/15/2013 10:40 AM	07/15/2013 11:45 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

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**CLIENT:** PBS Engineering & Environmental**Project:** UW Terry Hall

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**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 9:00:00 AM

Project: UW Terry Hall

Lab ID: 1307071-001

Matrix: Concrete

Client Sample ID: B1 Concrete

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.0954		mg/Kg-dry	1	7/15/2013 10:34:00 PM
Aroclor 1221	ND	0.0954		mg/Kg-dry	1	7/15/2013 10:34:00 PM
Aroclor 1232	ND	0.0954		mg/Kg-dry	1	7/15/2013 10:34:00 PM
Aroclor 1242	ND	0.0954		mg/Kg-dry	1	7/15/2013 10:34:00 PM
Aroclor 1248	ND	0.0954		mg/Kg-dry	1	7/15/2013 10:34:00 PM
Aroclor 1254	ND	0.0954		mg/Kg-dry	1	7/15/2013 10:34:00 PM
Aroclor 1260	0.581	0.0954		mg/Kg-dry	1	7/16/2013 3:35:00 PM
Aroclor 1262	ND	0.0954		mg/Kg-dry	1	7/15/2013 10:34:00 PM
Aroclor 1268	ND	0.0954		mg/Kg-dry	1	7/15/2013 10:34:00 PM
Total PCBs	0.581	0.0954		mg/Kg-dry	1	7/16/2013 3:35:00 PM
Surr: Decachlorobiphenyl	95.5	66.1-145		%REC	1	7/15/2013 10:34:00 PM
Surr: Tetrachloro-m-xylene	86.1	67.2-132		%REC	1	7/15/2013 10:34:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	2.21			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits





## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 9:10:00 AM

Project: UW Terry Hall

Lab ID: 1307071-002

Matrix: Soil

Client Sample ID: B1 15-20"

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 4975

Analyst: BR

Diesel (Fuel Oil)	ND	20.6		mg/Kg-dry	1	7/15/2013 5:01:00 PM
Heavy Oil	ND	51.5		mg/Kg-dry	1	7/15/2013 5:01:00 PM
Surr: 2-Fluorobiphenyl	119	50-150		%REC	1	7/15/2013 5:01:00 PM
Surr: o-Terphenyl	116	50-150		%REC	1	7/15/2013 5:01:00 PM

### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Aroclor 1221	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Aroclor 1232	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Aroclor 1242	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Aroclor 1248	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Aroclor 1254	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Aroclor 1260	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Aroclor 1262	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Aroclor 1268	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Total PCBs	ND	0.104		mg/Kg-dry	1	7/15/2013 8:54:00 PM
Surr: Decachlorobiphenyl	96.6	66.1-145		%REC	1	7/15/2013 8:54:00 PM
Surr: Tetrachloro-m-xylene	87.9	67.2-132		%REC	1	7/15/2013 8:54:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	5.57			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 9:55:00 AM

Project: UW Terry Hall

Lab ID: 1307071-004

Matrix: Concrete

Client Sample ID: B2 Concrete

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.0816		mg/Kg-dry	1	7/15/2013 10:58:00 PM
Aroclor 1221	ND	0.0816		mg/Kg-dry	1	7/15/2013 10:58:00 PM
Aroclor 1232	ND	0.0816		mg/Kg-dry	1	7/15/2013 10:58:00 PM
Aroclor 1242	ND	0.0816		mg/Kg-dry	1	7/15/2013 10:58:00 PM
Aroclor 1248	ND	0.0816		mg/Kg-dry	1	7/15/2013 10:58:00 PM
Aroclor 1254	ND	0.0816		mg/Kg-dry	1	7/15/2013 10:58:00 PM
Aroclor 1260	1.53	0.0816		mg/Kg-dry	1	7/16/2013 3:47:00 PM
Aroclor 1262	ND	0.0816		mg/Kg-dry	1	7/15/2013 10:58:00 PM
Aroclor 1268	ND	0.0816		mg/Kg-dry	1	7/15/2013 10:58:00 PM
Total PCBs	1.53	0.0816		mg/Kg-dry	1	7/16/2013 3:47:00 PM
Surr: Decachlorobiphenyl	101	66.1-145		%REC	1	7/15/2013 10:58:00 PM
Surr: Tetrachloro-m-xylene	86.1	67.2-132		%REC	1	7/15/2013 10:58:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	1.62			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



# Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 9:25:00 AM

Project: UW Terry Hall

Lab ID: 1307071-005

Matrix: Soil

Client Sample ID: B2 15-20"

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 4975

Analyst: BR

Diesel (Fuel Oil)	ND	21.3		mg/Kg-dry	1	7/15/2013 5:29:00 PM
Heavy Oil	ND	53.3		mg/Kg-dry	1	7/15/2013 5:29:00 PM
Surr: 2-Fluorobiphenyl	130	50-150		%REC	1	7/15/2013 5:29:00 PM
Surr: o-Terphenyl	126	50-150		%REC	1	7/15/2013 5:29:00 PM

**Polychlorinated Biphenyls (PCB) by EPA 8082**

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Aroclor 1221	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Aroclor 1232	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Aroclor 1242	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Aroclor 1248	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Aroclor 1254	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Aroclor 1260	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Aroclor 1262	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Aroclor 1268	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Total PCBs	ND	0.0989		mg/Kg-dry	1	7/15/2013 9:19:00 PM
Surr: Decachlorobiphenyl	91.7	66.1-145		%REC	1	7/15/2013 9:19:00 PM
Surr: Tetrachloro-m-xylene	90.7	67.2-132		%REC	1	7/15/2013 9:19:00 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R9221

Analyst: JS

Percent Moisture	7.61			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 9:50:00 AM

Project: UW Terry Hall

Lab ID: 1307071-007

Matrix: Concrete

Client Sample ID: B3 Concrete

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.0952		mg/Kg-dry	1	7/15/2013 11:23:00 PM
Aroclor 1221	ND	0.0952		mg/Kg-dry	1	7/15/2013 11:23:00 PM
Aroclor 1232	ND	0.0952		mg/Kg-dry	1	7/15/2013 11:23:00 PM
Aroclor 1242	ND	0.0952		mg/Kg-dry	1	7/15/2013 11:23:00 PM
Aroclor 1248	ND	0.0952		mg/Kg-dry	1	7/15/2013 11:23:00 PM
Aroclor 1254	14.5	0.952	D	mg/Kg-dry	10	7/16/2013 12:54:00 PM
Aroclor 1260	7.61	0.952	D	mg/Kg-dry	10	7/16/2013 3:10:00 PM
Aroclor 1262	ND	0.0952		mg/Kg-dry	1	7/15/2013 11:23:00 PM
Aroclor 1268	ND	0.0952		mg/Kg-dry	1	7/15/2013 11:23:00 PM
Total PCBs	22.1	0.952	D	mg/Kg-dry	10	7/16/2013 3:10:00 PM
Surr: Decachlorobiphenyl	105	66.1-145		%REC	1	7/15/2013 11:23:00 PM
Surr: Tetrachloro-m-xylene	82.8	67.2-132		%REC	1	7/15/2013 11:23:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	2.15			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 10:05:00 AM

Project: UW Terry Hall

Lab ID: 1307071-008

Matrix: Soil

Client Sample ID: B3 18-22"

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 4975

Analyst: BR

Diesel (Fuel Oil)	ND	21.0		mg/Kg-dry	1	7/15/2013 5:58:00 PM
Heavy Oil	ND	52.6		mg/Kg-dry	1	7/15/2013 5:58:00 PM
Surr: 2-Fluorobiphenyl	117	50-150		%REC	1	7/15/2013 5:58:00 PM
Surr: o-Terphenyl	114	50-150		%REC	1	7/15/2013 5:58:00 PM

### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Aroclor 1221	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Aroclor 1232	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Aroclor 1242	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Aroclor 1248	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Aroclor 1254	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Aroclor 1260	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Aroclor 1262	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Aroclor 1268	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Total PCBs	ND	0.103		mg/Kg-dry	1	7/15/2013 9:44:00 PM
Surr: Decachlorobiphenyl	93.8	66.1-145		%REC	1	7/15/2013 9:44:00 PM
Surr: Tetrachloro-m-xylene	87.2	67.2-132		%REC	1	7/15/2013 9:44:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	5.62			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 10:10:00 AM

Project: UW Terry Hall

Lab ID: 1307071-009

Matrix: Soil

Client Sample ID: B3 40-44"

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 4975

Analyst: BR

Diesel (Fuel Oil)	ND	19.8		mg/Kg-dry	1	7/15/2013 8:21:00 PM
Heavy Oil	ND	49.6		mg/Kg-dry	1	7/15/2013 8:21:00 PM
Surr: 2-Fluorobiphenyl	114	50-150		%REC	1	7/15/2013 8:21:00 PM
Surr: o-Terphenyl	112	50-150		%REC	1	7/15/2013 8:21:00 PM

### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 5000

Analyst: PH

Aroclor 1016	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Aroclor 1221	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Aroclor 1232	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Aroclor 1242	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Aroclor 1248	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Aroclor 1254	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Aroclor 1260	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Aroclor 1262	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Aroclor 1268	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Total PCBs	ND	0.0978		mg/Kg-dry	1	7/18/2013 12:29:00 PM
Surr: Decachlorobiphenyl	78.6	66.1-145		%REC	1	7/18/2013 12:29:00 PM
Surr: Tetrachloro-m-xylene	74.8	67.2-132		%REC	1	7/18/2013 12:29:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	6.87			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 9:50:00 AM

Project: UW Terry Hall

Lab ID: 1307071-010

Matrix: Concrete

Client Sample ID: B4 Concrete

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.0961		mg/Kg-dry	1	7/15/2013 11:48:00 PM
Aroclor 1221	ND	0.0961		mg/Kg-dry	1	7/15/2013 11:48:00 PM
Aroclor 1232	ND	0.0961		mg/Kg-dry	1	7/15/2013 11:48:00 PM
Aroclor 1242	ND	0.0961		mg/Kg-dry	1	7/15/2013 11:48:00 PM
Aroclor 1248	ND	0.0961		mg/Kg-dry	1	7/15/2013 11:48:00 PM
Aroclor 1254	ND	0.0961		mg/Kg-dry	1	7/15/2013 11:48:00 PM
Aroclor 1260	0.210	0.0961		mg/Kg-dry	1	7/16/2013 4:00:00 PM
Aroclor 1262	ND	0.0961		mg/Kg-dry	1	7/15/2013 11:48:00 PM
Aroclor 1268	ND	0.0961		mg/Kg-dry	1	7/15/2013 11:48:00 PM
Total PCBs	0.210	0.0961		mg/Kg-dry	1	7/16/2013 4:00:00 PM
Surr: Decachlorobiphenyl	99.8	66.1-145		%REC	1	7/15/2013 11:48:00 PM
Surr: Tetrachloro-m-xylene	82.9	67.2-132		%REC	1	7/15/2013 11:48:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	0.883			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



# Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 10:20:00 AM

Project: UW Terry Hall

Lab ID: 1307071-011

Matrix: Soil

Client Sample ID: B4 20-24"

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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## Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 4975

Analyst: BR

Diesel (Fuel Oil)	ND	21.1		mg/Kg-dry	1	7/15/2013 6:26:00 PM
Heavy Oil	ND	52.7		mg/Kg-dry	1	7/15/2013 6:26:00 PM
Surr: 2-Fluorobiphenyl	115	50-150		%REC	1	7/15/2013 6:26:00 PM
Surr: o-Terphenyl	112	50-150		%REC	1	7/15/2013 6:26:00 PM

## Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Aroclor 1221	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Aroclor 1232	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Aroclor 1242	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Aroclor 1248	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Aroclor 1254	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Aroclor 1260	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Aroclor 1262	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Aroclor 1268	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Total PCBs	ND	0.100		mg/Kg-dry	1	7/15/2013 9:56:00 PM
Surr: Decachlorobiphenyl	94.1	66.1-145		%REC	1	7/15/2013 9:56:00 PM
Surr: Tetrachloro-m-xylene	86.6	67.2-132		%REC	1	7/15/2013 9:56:00 PM

## Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	5.80			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits





## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 10:25:00 AM

Project: UW Terry Hall

Lab ID: 1307071-012

Matrix: Soil

Client Sample ID: B4 40-44"

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 4975

Analyst: BR

Diesel (Fuel Oil)	ND	19.4		mg/Kg-dry	1	7/15/2013 8:49:00 PM
Heavy Oil	ND	48.6		mg/Kg-dry	1	7/15/2013 8:49:00 PM
Surr: 2-Fluorobiphenyl	117	50-150		%REC	1	7/15/2013 8:49:00 PM
Surr: o-Terphenyl	112	50-150		%REC	1	7/15/2013 8:49:00 PM

### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Aroclor 1221	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Aroclor 1232	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Aroclor 1242	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Aroclor 1248	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Aroclor 1254	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Aroclor 1260	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Aroclor 1262	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Aroclor 1268	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Total PCBs	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:09:00 PM
Surr: Decachlorobiphenyl	90.6	66.1-145		%REC	1	7/15/2013 10:09:00 PM
Surr: Tetrachloro-m-xylene	87.6	67.2-132		%REC	1	7/15/2013 10:09:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	2.09			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 10:14:00 AM

Project: UW Terry Hall

Lab ID: 1307071-013

Matrix: Concrete

Client Sample ID: B5 Concrete

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Aroclor 1221	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Aroclor 1232	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Aroclor 1242	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Aroclor 1248	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Aroclor 1254	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Aroclor 1260	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Aroclor 1262	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Aroclor 1268	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Total PCBs	ND	0.0968		mg/Kg-dry	1	7/16/2013 12:13:00 AM
Surr: Decachlorobiphenyl	88.1	66.1-145		%REC	1	7/16/2013 12:13:00 AM
Surr: Tetrachloro-m-xylene	86.2	67.2-132		%REC	1	7/16/2013 12:13:00 AM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	2.58			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1307071

Date Reported: 7/18/2013

Client: PBS Engineering & Environmental

Collection Date: 7/15/2013 10:35:00 AM

Project: UW Terry Hall

Lab ID: 1307071-014

Matrix: Soil

Client Sample ID: B5 18-22"

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 4975

Analyst: BR

Diesel (Fuel Oil)	ND	19.9		mg/Kg-dry	1	7/15/2013 7:24:00 PM
Heavy Oil	ND	49.8		mg/Kg-dry	1	7/15/2013 7:24:00 PM
Surr: 2-Fluorobiphenyl	116	50-150		%REC	1	7/15/2013 7:24:00 PM
Surr: o-Terphenyl	112	50-150		%REC	1	7/15/2013 7:24:00 PM

### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 4978

Analyst: PH

Aroclor 1016	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Aroclor 1221	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Aroclor 1232	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Aroclor 1242	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Aroclor 1248	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Aroclor 1254	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Aroclor 1260	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Aroclor 1262	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Aroclor 1268	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Total PCBs	ND	0.0899		mg/Kg-dry	1	7/15/2013 10:21:00 PM
Surr: Decachlorobiphenyl	88.2	66.1-145		%REC	1	7/15/2013 10:21:00 PM
Surr: Tetrachloro-m-xylene	88.9	67.2-132		%REC	1	7/15/2013 10:21:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R9221

Analyst: JS

Percent Moisture	3.43			wt%	1	7/16/2013 8:11:06 AM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



Date: 7/18/2013

Work Order: 1307071

CLIENT: PBS Engineering &amp; Environmental

Project: UW Terry Hall

**QC SUMMARY REPORT****Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID: <b>LCS-4975</b>		SampType: <b>LCS</b>		Units: <b>mg/Kg</b>		Prep Date: <b>7/15/2013</b>			RunNo: <b>9218</b>		
Client ID: <b>LCSS</b>		Batch ID: <b>4975</b>					Analysis Date: <b>7/15/2013</b>			SeqNo: <b>185195</b>	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	584	20.0	500.0	0	117	65	135
Surr: 2-Fluorobiphenyl	24.9		20.00		124	50	150
Surr: o-Terphenyl	24.5		20.00		122	50	150

Sample ID: <b>MB-4975</b>	SampType: <b>MBLK</b>	Units: <b>mg/Kg</b>			Prep Date: <b>7/15/2013</b>			RunNo: <b>9218</b>			
Client ID: <b>MBLKS</b>	Batch ID: <b>4975</b>				Analysis Date: <b>7/15/2013</b>			SeqNo: <b>185196</b>			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	20.0					
Heavy Oil	ND	50.0					
Surr: 2-Fluorobiphenyl	25.4		20.00		127	50	150
Surr: o-Terphenyl	24.8		20.00		124	50	150

Sample ID: 1307071-014ADUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 7/15/2013			RunNo: 9218			
Client ID: B5 18-22"		Batch ID: 4975					Analysis Date: 7/15/2013			SeqNo: 185206		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Diesel (Fuel Oil)	ND	20.7						0	0	30
Heavy Oil	ND	51.7						0	0	30
Surr: 2-Fluorobiphenyl	24.1		20.67		117	50	150		0	
Surr: o-Terphenyl	23.4		20.67		113	50	150		0	

**Qualifiers:**

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
R	RPD outside accepted recovery limits

D	Dilution was required
J	Analyte detected below quantitation limits
RL	Reporting Limit

E	Value above quantitation range
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Date: 7/18/2013

Work Order: 1307071

CLIENT: PBS Engineering &amp; Environmental

Project: UW Terry Hall

## QC SUMMARY REPORT

## Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: <b>MB-4978</b>	SampType: <b>MBLK</b>	Units: <b>mg/Kg</b>			Prep Date: <b>7/15/2013</b>			RunNo: <b>9239</b>			
Client ID: <b>MBLKS</b>	Batch ID: <b>4978</b>				Analysis Date: <b>7/15/2013</b>			SeqNo: <b>185440</b>			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.100									
Aroclor 1221	ND	0.100									
Aroclor 1232	ND	0.100									
Aroclor 1242	ND	0.100									
Aroclor 1248	ND	0.100									
Aroclor 1254	ND	0.100									
Aroclor 1260	ND	0.100									
Aroclor 1262	ND	0.100									
Aroclor 1268	ND	0.100									
Total PCBs	ND	0.100									
Surr: Decachlorobiphenyl	46.1		50.00		92.1	66.1	145				
Surr: Tetrachloro-m-xylene	45.4		50.00		90.9	67.2	132				

Sample ID: <b>LCS-4978</b>	SampType: <b>LCS</b>	Units: <b>mg/Kg</b>			Prep Date: <b>7/15/2013</b>			RunNo: <b>9239</b>			
Client ID: <b>LCSS</b>	Batch ID: <b>4978</b>				Analysis Date: <b>7/15/2013</b>			SeqNo: <b>185441</b>			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1248	0.991	0.100	1.000	0	99.1	65	135				
Surr: Decachlorobiphenyl	46.2		50.00		92.4	66.1	145				
Surr: Tetrachloro-m-xylene	43.1		50.00		86.2	67.2	132				

Sample ID: 1307071-002ADUP	SampType: DUP	Units: mg/Kg-dry			Prep Date: 7/15/2013			RunNo: 9239			
Client ID: B1 15-20"	Batch ID: 4978				Analysis Date: 7/15/2013			SeqNo: 185443			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.0999						0	0	30	
Aroclor 1221	ND	0.0999						0	0	30	
Aroclor 1232	ND	0.0999						0	0	30	

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
R RPD outside accepted recovery limits

D Dilution was required  
J Analyte detected below quantitation limits  
RL Reporting Limit

E Value above quantitation range  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



Date: 7/18/2013

**Work Order:** 1307071  
**CLIENT:** PBS Engineering & Environmental  
**Project:** UW Terry Hall

## QC SUMMARY REPORT

### Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: <b>1307071-002ADUP</b>		SampType: <b>DUP</b>		Units: <b>mg/Kg-dry</b>		Prep Date: <b>7/15/2013</b>		RunNo: <b>9239</b>			
Client ID: <b>B1 15-20"</b>		Batch ID: <b>4978</b>				Analysis Date: <b>7/15/2013</b>		SeqNo: <b>185443</b>			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1242	ND	0.0999						0	0	30	
Aroclor 1248	ND	0.0999						0	0	30	
Aroclor 1254	ND	0.0999						0	0	30	
Aroclor 1260	ND	0.0999						0	0	30	
Aroclor 1262	ND	0.0999						0	0	30	
Aroclor 1268	ND	0.0999						0	0	30	
Total PCBs	ND	0.0999						0	0	30	
Surr: Decachlorobiphenyl	46.9		49.95		93.9	66.1	145		0		
Surr: Tetrachloro-m-xylene	44.7		49.95		89.4	67.2	132		0		

Sample ID: <b>1307071-005AMS</b>		SampType: <b>MS</b>		Units: <b>mg/Kg-dry</b>		Prep Date: <b>7/15/2013</b>		RunNo: <b>9239</b>			
Client ID: <b>B2 15-20"</b>		Batch ID: <b>4978</b>				Analysis Date: <b>7/15/2013</b>		SeqNo: <b>185445</b>			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1248	0.984	0.0986	0.9858	0	99.8	65	135				
Surr: Decachlorobiphenyl	46.3		49.29		94.0	66.1	145				
Surr: Tetrachloro-m-xylene	42.2		49.29		85.6	67.2	132				

Sample ID: <b>ICV-4978 (A1254)</b>		SampType: <b>ICV</b>		Units: <b>mg/Kg</b>		Prep Date: <b>7/16/2013</b>		RunNo: <b>9239</b>			
Client ID: <b>ICV</b>		Batch ID: <b>4978</b>				Analysis Date: <b>7/16/2013</b>		SeqNo: <b>185456</b>			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	1.11	0.100	1.000	0	111	70	130				
Surr: Decachlorobiphenyl	212		200.0		106	66.1	145				
Surr: Tetrachloro-m-xylene	193		200.0		96.7	67.2	132				

**Qualifiers:**

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 7/18/2013

Work Order: 1307071

CLIENT: PBS Engineering &amp; Environmental

Project: UW Terry Hall

## QC SUMMARY REPORT

## Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: <b>ICV-4978 (A1260)</b>		SampType: <b>ICV</b>		Units: <b>mg/Kg</b>		Prep Date: <b>7/16/2013</b>			RunNo: <b>9239</b>		
Client ID: <b>ICV</b>		Batch ID: <b>4978</b>					Analysis Date: <b>7/16/2013</b>			SeqNo: <b>185459</b>	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1260	0.961	0.100	1.000	0	96.1	70	130
Surr: Decachlorobiphenyl	194		200.0		96.9	66.1	145
Surr: Tetrachloro-m-xylene	196		200.0		98.1	67.2	132

Sample ID: <b>MB-5000</b>	SampType: <b>MBLK</b>	Units: <b>mg/Kg</b>			Prep Date: <b>7/18/2013</b>			RunNo: <b>9261</b>			
Client ID: <b>MBLKS</b>	Batch ID: <b>5000</b>				Analysis Date: <b>7/18/2013</b>			SeqNo: <b>185844</b>			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1016	ND	0.100					
Aroclor 1221	ND	0.100					
Aroclor 1232	ND	0.100					
Aroclor 1242	ND	0.100					
Aroclor 1248	ND	0.100					
Aroclor 1254	ND	0.100					
Aroclor 1260	ND	0.100					
Aroclor 1262	ND	0.100					
Aroclor 1268	ND	0.100					
Total PCBs	ND	0.100					
Surr: Decachlorobiphenyl	37.4		50.00		74.7	66.1	145
Surr: Tetrachloro-m-xylene	38.0		50.00		76.0	67.2	132

Sample ID: <b>LCS-5000</b>		SampType: <b>LCS</b>		Units: <b>mg/Kg</b>		Prep Date: <b>7/18/2013</b>			RunNo: <b>9261</b>		
Client ID: <b>LCSS</b>		Batch ID: <b>5000</b>					Analysis Date: <b>7/18/2013</b>			SeqNo: <b>185845</b>	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1248	0.984	0.100	1.000	0	98.4	65	135
Surr: Decachlorobiphenyl	37.1		50.00		74.1	66.1	145
Surr: Tetrachloro-m-xylene	37.5		50.00		75.1	67.2	132

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 7/18/2013

Work Order: 1307071

CLIENT: PBS Engineering & Environmental

Project: UW Terry Hall

## QC SUMMARY REPORT

### Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: <b>LCS-5000</b>	SampType: <b>LCS</b>	Units: <b>mg/Kg</b>		Prep Date: <b>7/18/2013</b>	RunNo: <b>9261</b>
Client ID: <b>LCSS</b>	Batch ID: <b>5000</b>	Analysis Date: <b>7/18/2013</b>		SeqNo: <b>185845</b>	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sample ID: <b>1307071-009ADUP</b>	SampType: <b>DUP</b>	Units: <b>mg/Kg-dry</b>		Prep Date: <b>7/18/2013</b>	RunNo: <b>9261</b>
Client ID: <b>B3 40-44"</b>	Batch ID: <b>5000</b>	Analysis Date: <b>7/18/2013</b>		SeqNo: <b>185847</b>	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Aroclor 1016	ND	0.0971			0 0 30
Aroclor 1221	ND	0.0971			0 0 30
Aroclor 1232	ND	0.0971			0 0 30
Aroclor 1242	ND	0.0971			0 0 30
Aroclor 1248	ND	0.0971			0 0 30
Aroclor 1254	ND	0.0971			0 0 30
Aroclor 1260	ND	0.0971			0 0 30
Aroclor 1262	ND	0.0971			0 0 30
Aroclor 1268	ND	0.0971			0 0 30
Total PCBs	ND	0.0971			0 0 30
Surr: Decachlorobiphenyl	40.1		48.55		82.6 66.1 145 0
Surr: Tetrachloro-m-xylene	38.0		48.55		78.2 67.2 132 0

Sample ID: <b>1307071-009AMS</b>	SampType: <b>MS</b>	Units: <b>mg/Kg-dry</b>		Prep Date: <b>7/18/2013</b>	RunNo: <b>9261</b>
Client ID: <b>B3 40-44"</b>	Batch ID: <b>5000</b>	Analysis Date: <b>7/18/2013</b>		SeqNo: <b>185848</b>	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Aroclor 1248	0.855	0.0908	0.9085	0	94.1 65 135
Surr: Decachlorobiphenyl	34.2		45.42		75.4 66.1 145
Surr: Tetrachloro-m-xylene	33.8		45.42		74.4 67.2 132

#### Qualifiers:

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
R RPD outside accepted recovery limits

D Dilution was required  
J Analyte detected below quantitation limits  
RL Reporting Limit

E Value above quantitation range  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits





## Sample Log-In Check List

Client Name: **PBS**

Work Order Number: **1307071**

Logged by: **Chelsea Ward**

Date Received: **7/15/2013 11:45:00 AM**

### Chain of Custody

1. Were custodial seals present? Yes ☐ No ☐ Not Required ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Client

### Log In

4. Coolers are present? Yes ☐ No ☒ NA ☐
- Samples received straight from field, see COC.**
5. Was an attempt made to cool the samples? Yes ☐ No ☐ NA ☒
6. Were all coolers received at a temperature of  $>0^{\circ}\text{C}$  to  $10.0^{\circ}\text{C}$ ? Yes ☐ No ☐ NA ☒
7. Sample(s) in proper container(s)? Yes ☒ No ☐
8. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
9. Are samples properly preserved? Yes ☒ No ☐
10. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
11. Is there headspace present in VOA vials? Yes ☐ No ☐ NA ☒
12. Did all sample containers arrive in good condition?(unbroken) Yes ☒ No ☐
13. Does paperwork match bottle labels? Yes ☒ No ☐
14. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
15. Is it clear what analyses were requested? Yes ☒ No ☐
16. Were all holding times able to be met? Yes ☒ No ☐

### Special Handling (if applicable)

17. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

18. Additional remarks/Discrepancies

### Item Information



1311 N. 35th Street  
Seattle, WA 98103  
Tel: 206-352-3790  
Fax: 206-352-7178

# Chain of Custody Record

Calibration Project No. (Internal): 1307071

Page: 1 of: 1

Client: PBS ENV.

Address:

City, State, Zip: SEATTLE, WA

Tel: 206.223.6939

Project Name:

Location:

Collected by:

UW TERRY HALL

PBS GARAGE LEVEL

Tom Mery

Reports To (PM): Tom Mery Email: Tom.mery@phseni.com Project No.: 40035.590

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Analysis	Notes
1 B1 concrete	7-15-13	9:00	Conc	✓	
2 B1 15-20"		9:10	Soil	✓	
3 B1 40-48"		9:15	Soil	✓	
4 B2 concrete		9:55	Conc	✓	
5 B2 16-20"		9:25		✓	
6 B2 40-44"		9:30		✓	
7 B3 concrete		9:50	Conc	✓	
8 B3 18-22"		10:05		✓	
9 B3 40-44"		10:10		✓	
10					

Metals Analysis (Circle): ☐ VTCA-5 ☐ HCA-8 ☐ Priority Pollutants ☐ TAL ☐ Individual ☐ All ☐ As ☐ Ba ☐ Bi ☐ Br ☐ Ca ☐ Cd ☐ Cr ☐ Cu ☐ Fe ☐ Hg ☐ K ☐ Mg ☐ Mn ☐ Ni ☐ Pb ☐ Se ☐ Si ☐ Ti ☐ V ☐ Zn

Anions (Circle): ☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ Fluoride ☐ Phosphate ☐ Nitrate-Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A formal bioassay sample is required after bioassay)

Requisitioned: 7/15/13 11:45 Date/Time

Requisitioned: 7/15/13 11:45 Date/Time

Special Remarks:

TAT: 2 Day 3 Day 5 Day 10 Day 15 Day 20 Day 30 Day 45 Day 60 Day 90 Day 120 Day 180 Day 270 Day 360 Day 540 Day 720 Day 1080 Day 1440 Day 2160 Day 3240 Day 4320 Day 5400 Day 6480 Day 7560 Day 8640 Day 9720 Day 10800 Day 11880 Day 12960 Day 14040 Day 15120 Day 16200 Day 17280 Day 18360 Day 19440 Day 20520 Day 21600 Day 22680 Day 23760 Day 24840 Day 25920 Day 27000 Day 28080 Day 29160 Day 30240 Day 31320 Day 32400 Day 33480 Day 34560 Day 35640 Day 36720 Day 37800 Day 38880 Day 39960 Day 41040 Day 42120 Day 43200 Day 44280 Day 45360 Day 46440 Day 47520 Day 48600 Day 49680 Day 50760 Day 51840 Day 52920 Day 54000 Day 55080 Day 56160 Day 57240 Day 58320 Day 59400 Day 60480 Day 61560 Day 62640 Day 63720 Day 64800 Day 65880 Day 66960 Day 68040 Day 69120 Day 70200 Day 71280 Day 72360 Day 73440 Day 74520 Day 75600 Day 76680 Day 77760 Day 78840 Day 79920 Day 81000 Day 82080 Day 83160 Day 84240 Day 85320 Day 86400 Day 87480 Day 88560 Day 89640 Day 90720 Day 91800 Day 92880 Day 93960 Day 95040 Day 96120 Day 97200 Day 98280 Day 99360 Day 100440 Day 101520 Day 102600 Day 103680 Day 104760 Day 105840 Day 106920 Day 108000 Day 109080 Day 110160 Day 111240 Day 112320 Day 113400 Day 114480 Day 115560 Day 116640 Day 117720 Day 118800 Day 119880 Day 120960 Day 122040 Day 123120 Day 124200 Day 125280 Day 126360 Day 127440 Day 128520 Day 129600 Day 130680 Day 131760 Day 132840 Day 133920 Day 135000 Day 136080 Day 137160 Day 138240 Day 139320 Day 140400 Day 141480 Day 142560 Day 143640 Day 144720 Day 145800 Day 146880 Day 147960 Day 149040 Day 150120 Day 151200 Day 152280 Day 153360 Day 154440 Day 155520 Day 156600 Day 157680 Day 158760 Day 159840 Day 160920 Day 162000 Day 163080 Day 164160 Day 165240 Day 166320 Day 167400 Day 168480 Day 169560 Day 170640 Day 171720 Day 172800 Day 173880 Day 174960 Day 176040 Day 177120 Day 178200 Day 179280 Day 180360 Day 181440 Day 182520 Day 183600 Day 184680 Day 185760 Day 186840 Day 187920 Day 189000 Day 190080 Day 191160 Day 192240 Day 193320 Day 194400 Day 195480 Day 196560 Day 197640 Day 198720 Day 199800 Day 200880 Day 201960 Day 203040 Day 204120 Day 205200 Day 206280 Day 207360 Day 208440 Day 209520 Day 210600 Day 211680 Day 212760 Day 213840 Day 214920 Day 216000 Day 217080 Day 218160 Day 219240 Day 220320 Day 221400 Day 222480 Day 223560 Day 224640 Day 225720 Day 226800 Day 227880 Day 228960 Day 230040 Day 231120 Day 232200 Day 233280 Day 234360 Day 235440 Day 236520 Day 237600 Day 238680 Day 239760 Day 240840 Day 241920 Day 243000 Day 244080 Day 245160 Day 246240 Day 247320 Day 248400 Day 249480 Day 250560 Day 251640 Day 252720 Day 253800 Day 254880 Day 255960 Day 257040 Day 258120 Day 259200 Day 260280 Day 261360 Day 262440 Day 263520 Day 264600 Day 265680 Day 266760 Day 267840 Day 268920 Day 270000 Day 271080 Day 272160 Day 273240 Day 274320 Day 275400 Day 276480 Day 277560 Day 278640 Day 279720 Day 280800 Day 281880 Day 282960 Day 284040 Day 285120 Day 286200 Day 287280 Day 288360 Day 289440 Day 290520 Day 291600 Day 292680 Day 293760 Day 294840 Day 295920 Day 297000 Day 298080 Day 299160 Day 300240 Day 301320 Day 302400 Day 303480 Day 304560 Day 305640 Day 306720 Day 307800 Day 308880 Day 309960 Day 311040 Day 312120 Day 313200 Day 314280 Day 315360 Day 316440 Day 317520 Day 318600 Day 319680 Day 320760 Day 321840 Day 322920 Day 324000 Day 325080 Day 326160 Day 327240 Day 328320 Day 329400 Day 330480 Day 331560 Day 332640 Day 333720 Day 334800 Day 335880 Day 336960 Day 338040 Day 339120 Day 340200 Day 341280 Day 342360 Day 343440 Day 344520 Day 345600 Day 346680 Day 347760 Day 348840 Day 349920 Day 351000 Day 352080 Day 353160 Day 354240 Day 355320 Day 356400 Day 357480 Day 358560 Day 359640 Day 360720 Day 361800 Day 362880 Day 363960 Day 365040 Day 366120 Day 367200 Day 368280 Day 369360 Day 370440 Day 371520 Day 372600 Day 373680 Day 374760 Day 375840 Day 376920 Day 378000 Day 379080 Day 380160 Day 381240 Day 382320 Day 383400 Day 384480 Day 385560 Day 386640 Day 387720 Day 388800 Day 389880 Day 390960 Day 392040 Day 393120 Day 394200 Day 395280 Day 396360 Day 397440 Day 398520 Day 399600 Day 400680 Day 401760 Day 402840 Day 403920 Day 405000 Day 406080 Day 407160 Day 408240 Day 409320 Day 410400 Day 411480 Day 412560 Day 413640 Day 414720 Day 415800 Day 416880 Day 417960 Day 419040 Day 420120 Day 421200 Day 422280 Day 423360 Day 424440 Day 425520 Day 426600 Day 427680 Day 428760 Day 429840 Day 430920 Day 432000 Day 433080 Day 434160 Day 435240 Day 436320 Day 437400 Day 438480 Day 439560 Day 440640 Day 441720 Day 442800 Day 443880 Day 444960 Day 446040 Day 447120 Day 448200 Day 449280 Day 450360 Day 451440 Day 452520 Day 453600 Day 454680 Day 455760 Day 456840 Day 457920 Day 459000 Day 460080 Day 461160 Day 462240 Day 463320 Day 464400 Day 465480 Day 466560 Day 467640 Day 468720 Day 469800 Day 470880 Day 471960 Day 473040 Day 474120 Day 475200 Day 476280 Day 477360 Day 478440 Day 479520 Day 480600 Day 481680 Day 482760 Day 483840 Day 484920 Day 486000 Day 487080 Day 488160 Day 489240 Day 490320 Day 491400 Day 492480 Day 493560 Day 494640 Day 495720 Day 496800 Day 497880 Day 498960 Day 500040 Day 501120 Day 502200 Day 503280 Day 504360 Day 505440 Day 506520 Day 507600 Day 508680 Day 509760 Day 510840 Day 511920 Day 513000 Day 514080 Day 515160 Day 516240 Day 517320 Day 518400 Day 519480 Day 520560 Day 521640 Day 522720 Day 523800 Day 524880 Day 525960 Day 527040 Day 528120 Day 529200 Day 530280 Day 531360 Day 532440 Day 533520 Day 534600 Day 535680 Day 536760 Day 537840 Day 538920 Day 540000 Day 541080 Day 542160 Day 543240 Day 544320 Day 545400 Day 546480 Day 547560 Day 548640 Day 549720 Day 550800 Day 551880 Day 552960 Day 554040 Day 555120 Day 556200 Day 557280 Day 558360 Day 559440 Day 560520 Day 561600 Day 562680 Day 563760 Day 564840 Day 565920 Day 567000 Day 568080 Day 569160 Day 570240 Day 571320 Day 572400 Day 573480 Day 574560 Day 575640 Day 576720 Day 577800 Day 578880 Day 579960 Day 581040 Day 582120 Day 583200 Day 584280 Day 585360 Day 586440 Day 587520 Day 588600 Day 589680 Day 590760 Day 591840 Day 592920 Day 594000 Day 595080 Day 596160 Day 597240 Day 598320 Day 599400 Day 600480 Day 601560 Day 602640 Day 603720 Day 604800 Day 605880 Day 606960 Day 608040 Day 609120 Day 610200 Day 611280 Day 612360 Day 613440 Day 614520 Day 615600 Day 616680 Day 617760 Day 618840 Day 619920 Day 621000 Day 622080 Day 623160 Day 624240 Day 625320 Day 626400 Day 627480 Day 628560 Day 629640 Day 630720 Day 631800 Day 632880 Day 633960 Day 635040 Day 636120 Day 637200 Day 638280 Day 639360 Day 640440 Day 641520 Day 642600 Day 643680 Day 644760 Day 645840 Day 646920 Day 648000 Day 649080 Day 650160 Day 651240 Day 652320 Day 653400 Day 654480 Day 655560 Day 656640 Day 657720 Day 658800 Day 659880 Day 660960 Day 662040 Day 663120 Day 664200 Day 665280 Day 666360 Day 667440 Day 668520 Day 669600 Day 670680 Day 671760 Day 672840 Day 673920 Day 675000 Day 676080 Day 677160 Day 678240 Day 679320 Day 680400 Day 681480 Day 682560 Day 683640 Day 684720 Day 685800 Day 686880 Day 687960 Day 689040 Day 690120 Day 691200 Day 692280 Day 693360 Day 694440 Day 695520 Day 696600 Day 697680 Day 698760 Day 699840 Day 700920 Day 702000 Day 703080 Day 704160 Day 705240 Day 706320 Day 707400 Day 708480 Day 709560 Day 710640 Day 711720 Day 712800 Day 713880 Day 714960 Day 716040 Day 717120 Day 718200 Day 719280 Day 720360 Day 721440 Day 722520 Day 723600 Day 724680 Day 725760 Day 726840 Day 727920 Day 729000 Day 730080 Day 731160 Day 732240 Day 733320 Day 734400 Day 735480 Day 736560 Day 737640 Day 738720 Day 739800 Day 740880 Day 741960 Day 743040 Day 744120 Day 745200 Day 746280 Day 747360 Day 748440 Day 749520 Day 750600 Day 751680 Day 752760 Day 753840 Day 754920 Day 756000 Day 757080 Day 758160 Day 759240 Day 760320 Day 761400 Day 762480 Day 763560 Day 764640 Day 765720 Day 766800 Day 767880 Day 768960 Day 770040 Day 771120 Day 772200 Day 773280 Day 774360 Day 775440 Day 776520 Day 777600 Day 778680 Day 779760 Day 780840 Day 781920 Day 783000 Day 784080 Day 785160 Day 786240 Day 787320 Day 788400 Day 789480 Day 790560 Day 791640 Day 792720 Day 793800 Day 794880 Day 795960 Day 797040 Day 798120 Day 799200 Day 800280 Day 801360 Day 802440 Day 803520 Day 804600 Day 805680 Day 806760 Day 807840 Day 808920 Day 810000 Day 811080 Day 812160 Day 813240 Day 814320 Day 815400 Day 816480 Day 817560 Day 818640 Day 819720 Day 820800 Day 821880 Day 822960 Day 824040 Day 825120 Day 826200 Day 827280 Day 828360 Day 829440 Day 830520 Day 831600 Day 832680 Day 833760 Day 834840 Day 835920 Day 837000 Day 838080 Day 839160 Day 840240 Day 841320 Day 842400 Day 843480 Day 844560 Day 845640 Day 846720 Day 847800 Day 848880 Day 849960 Day 851040 Day 852120 Day 853200 Day 854280 Day 855360 Day 856440 Day 857520 Day 858600 Day 859680 Day 860760 Day 861840 Day 862920 Day 864000 Day 865080 Day 866160 Day 867240 Day 868320 Day 869400 Day 870480 Day 871560 Day 872640 Day 873720 Day 874800



Tel: 206-352-3790  
Fax: 206-352-7178

06035V90

Collected by:

### Chain of Custody Record

Tom WERCY

Sample Name	Sample Date	Sample Time	Sample Type (Material)	Comments/Depth
1 B4 concrete	2/15/13	9:50		
2 B4 20-24"		10:20		
3 B4 40-44"		10:25		
4 B5 concrete		10:14		
5 B5 18-22"		10:35		
6 BS 40-44"		10:40		
7				
8				
9				
10				

*Metals Analysis (Circle):		MTCAs	RCRA-9	Priority Pollutants	TAL	Individuals	Ag	Al	As	B	Be	Bi	Ca	Co	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Pl	Se	Si	Sn	Ti	V	Zn
**Anions (Circle):		Nitrate	Nitrite	Chloride	Sulfate	Bromide	Oxyanions	Fluoride																				

Sample Disposal:		<input type="checkbox"/> Rejection by Lab (a) or (b) or (c) or (d) or (e) or (f) or (g) or (h) or (i) or (j) or (k) or (l) or (m) or (n) or (o) or (p) or (q) or (r) or (s) or (t) or (u) or (v) or (w) or (x) or (y) or (z) or (aa) or (ab) or (ac) or (ad) or (ae) or (af) or (ag) or (ah) or (ai) or (aj) or (ak) or (al) or (am) or (an) or (ao) or (ap) or (aq) or (ar) or (as) or (at) or (au) or (av) or (aw) or (ax) or (ay) or (az) or (ba) or (bb) or (bc) or (bd) or (be) or (bf) or (bg) or (bh) or (bi) or (bj) or (bk) or (bl) or (bm) or (bn) or (bo) or (bp) or (bq) or (br) or (bs) or (bt) or (bu) or (bv) or (bw) or (bx) or (by) or (bz) or (ca) or (cb) or (cc) or (cd) or (ce) or (cf) or (cg) or (ch) or (ci) or (cj) or (ck) or (cl) or (cm) or (cn) or (co) or (cp) or (cq) or (cr) or (cs) or (ct) or (cu) or (cv) or (cw) or (cx) or (cy) or (cz) or (da) or (db) or (dc) or (dd) or (de) or (df) or (dg) or (dh) or (di) or (dj) or (dk) or (dl) or (dm) or (dn) or (do) or (dp) or (dq) 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Distribution: White - Lab, Yellow - File, Pink - Originator

[www.fremontanalytical.com](http://www.fremontanalytical.com)





1311 W. 35th Street  
Seattle, WA 98103  
Tel: 206-352-3790  
Fax: 206-352-3178

# Chain of Custody Record

Laboratory Project No (Internal): 1307071A

Page: 1 of 1

Date: 7/15/13

Client: PBS ENV.

Project Name: UW TERRY HALL

Location: PB3 GARAGE LEVEL

City, State, Zip: SEATTLE, WA

Collected by: Tom Mery

Phone: 206-223-6939

Relays To (Name): Tom Mery

Relays To (Phone): 206-223-6939

Relays To (Email): tom.mery@pbsenv.com

Project Num: 40035590

Sample Name	Sample Time	Sample Type (Matrix)	Sample ID	Analysis	Analysis Date	Analysis Time	Analysis Location	Analysis Method	Analysis Result	Analysis Unit	Analysis Comment
B1 concrete	7:15:13	9:00	Conc								
B1 15-20"		9:10	Soil								
B1 40-48"		9:15	Soil								
B2 concrete		9:55	Conc								
B2 16-20"		9:25									
B2 40-44"		9:30									
B3 concrete		9:50	Conc								
B3 18-22"		10:05									
B3 40-44"		10:10									

Add Analysis per client request 7/15/13 and Hold

Hold

Hold

Hold

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Destination: White Lab Yellow File / Hold - Original





3600 Fremont Ave. N.  
Seattle, WA 98103  
T: (206) 352-3790  
F: (206) 352-7178  
info@fremontanalytical.com

**PBS Engineering & Environmental**  
Tim Ogden  
2517 Eastlake Ave, E #100  
Seattle, WA 98102

**RE: U of Terry Hall**  
**Lab ID: 1403091**

March 13, 2014

**Attention Tim Ogden:**

Fremont Analytical, Inc. received 5 sample(s) on 3/11/2014 for the analyses presented in the following report.

***Polychlorinated Biphenyls (PCB) by EPA 8082***  
***Sample Moisture (Percent Moisture)***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Michael Dee  
Sr. Chemist / Principal

**CC:**  
Tom Mergy



Date: 03/13/2014

**CLIENT:** PBS Engineering & Environmental  
**Project:** U of Terry Hall  
**Lab Order:** 1403091

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1403091-001	Core 1 (NW)	02/19/2014 12:00 AM	03/11/2014 9:37 AM
1403091-002	Core 2 (NE)	02/19/2014 12:00 AM	03/11/2014 9:37 AM
1403091-003	Core 3 (Center)	02/19/2014 12:00 AM	03/11/2014 9:37 AM
1403091-004	Core 4 (E)	02/19/2014 12:00 AM	03/11/2014 9:37 AM
1403091-005	Core 5 (W)	02/19/2014 12:00 AM	03/11/2014 9:37 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

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**CLIENT:** PBS Engineering & Environmental**Project:** U of Terry Hall

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**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.





## Analytical Report

WO#: 1403091

Date Reported: 3/13/2014

**Client:** PBS Engineering & Environmental

**Collection Date:** 2/19/2014

**Project:** U of Terry Hall

**Lab ID:** 1403091-001

**Matrix:** Concrete

**Client Sample ID:** Core 1 (NW)

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 6851

Analyst: PH

Aroclor 1016	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Aroclor 1221	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Aroclor 1232	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Aroclor 1242	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Aroclor 1248	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Aroclor 1254	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Aroclor 1260	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Aroclor 1262	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Aroclor 1268	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Total PCBs	ND	0.102		mg/Kg-dry	1	3/12/2014 9:51:00 PM
Surr: Decachlorobiphenyl	91.4	50.2-159		%REC	1	3/12/2014 9:51:00 PM
Surr: Tetrachloro-m-xylene	80.9	60.3-134		%REC	1	3/12/2014 9:51:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R12990

Analyst: KZ

Percent Moisture	2.21			wt%	1	3/12/2014 3:42:40 PM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1403091

Date Reported: 3/13/2014

Client: PBS Engineering & Environmental

Collection Date: 2/19/2014

Project: U of Terry Hall

Lab ID: 1403091-002

Matrix: Concrete

Client Sample ID: Core 2 (NE)

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 6851

Analyst: PH

Aroclor 1016	ND	0.102		mg/Kg-dry	1	3/12/2014 10:09:00 PM
Aroclor 1221	ND	0.102		mg/Kg-dry	1	3/12/2014 10:09:00 PM
Aroclor 1232	ND	0.102		mg/Kg-dry	1	3/12/2014 10:09:00 PM
Aroclor 1242	ND	0.102		mg/Kg-dry	1	3/12/2014 10:09:00 PM
Aroclor 1248	1.37	0.102		mg/Kg-dry	1	3/13/2014 2:22:00 PM
Aroclor 1254	ND	0.102		mg/Kg-dry	1	3/12/2014 10:09:00 PM
Aroclor 1260	ND	0.102		mg/Kg-dry	1	3/12/2014 10:09:00 PM
Aroclor 1262	ND	0.102		mg/Kg-dry	1	3/12/2014 10:09:00 PM
Aroclor 1268	ND	0.102		mg/Kg-dry	1	3/12/2014 10:09:00 PM
Total PCBs	1.37	0.102		mg/Kg-dry	1	3/13/2014 2:22:00 PM
Surr: Decachlorobiphenyl	91.3	50.2-159		%REC	1	3/12/2014 10:09:00 PM
Surr: Tetrachloro-m-xylene	85.7	60.3-134		%REC	1	3/12/2014 10:09:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R12990

Analyst: KZ

Percent Moisture	3.16			wt%	1	3/12/2014 3:42:40 PM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1403091

Date Reported: 3/13/2014

Client: PBS Engineering & Environmental

Collection Date: 2/19/2014

Project: U of Terry Hall

Lab ID: 1403091-003

Matrix: Concrete

Client Sample ID: Core 3 (Center)

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 6851

Analyst: PH

Aroclor 1016	ND	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Aroclor 1221	ND	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Aroclor 1232	ND	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Aroclor 1242	ND	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Aroclor 1248	ND	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Aroclor 1254	ND	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Aroclor 1260	0.124	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Aroclor 1262	ND	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Aroclor 1268	ND	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Total PCBs	0.124	0.0967		mg/Kg-dry	1	3/12/2014 10:27:00 PM
Surr: Decachlorobiphenyl	91.4	50.2-159		%REC	1	3/12/2014 10:27:00 PM
Surr: Tetrachloro-m-xylene	85.8	60.3-134		%REC	1	3/12/2014 10:27:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R12990

Analyst: KZ

Percent Moisture	3.54			wt%	1	3/12/2014 3:42:40 PM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1403091

Date Reported: 3/13/2014

Client: PBS Engineering & Environmental

Collection Date: 2/19/2014

Project: U of Terry Hall

Lab ID: 1403091-004

Matrix: Concrete

Client Sample ID: Core 4 (E)

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 6851

Analyst: PH

Aroclor 1016	ND	0.100		mg/Kg-dry	1	3/12/2014 10:45:00 PM
Aroclor 1221	ND	0.100		mg/Kg-dry	1	3/12/2014 10:45:00 PM
Aroclor 1232	ND	0.100		mg/Kg-dry	1	3/12/2014 10:45:00 PM
Aroclor 1242	ND	0.100		mg/Kg-dry	1	3/12/2014 10:45:00 PM
Aroclor 1248	ND	0.100		mg/Kg-dry	1	3/12/2014 10:45:00 PM
Aroclor 1254	32.3	2.00	D	mg/Kg-dry	20	3/13/2014 9:16:00 AM
Aroclor 1260	ND	0.100		mg/Kg-dry	1	3/12/2014 10:45:00 PM
Aroclor 1262	ND	0.100		mg/Kg-dry	1	3/12/2014 10:45:00 PM
Aroclor 1268	ND	0.100		mg/Kg-dry	1	3/12/2014 10:45:00 PM
Total PCBs	32.3	2.00	D	mg/Kg-dry	20	3/13/2014 9:16:00 AM
Surr: Decachlorobiphenyl	94.0	50.2-159		%REC	1	3/12/2014 10:45:00 PM
Surr: Tetrachloro-m-xylene	84.8	60.3-134		%REC	1	3/12/2014 10:45:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R12990

Analyst: KZ

Percent Moisture	3.45			wt%	1	3/12/2014 3:42:40 PM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



## Analytical Report

WO#: 1403091

Date Reported: 3/13/2014

Client: PBS Engineering & Environmental

Collection Date: 2/19/2014

Project: U of Terry Hall

Lab ID: 1403091-005

Matrix: Concrete

Client Sample ID: Core 5 (W)

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Polychlorinated Biphenyls (PCB) by EPA 8082

Batch ID: 6851

Analyst: PH

Aroclor 1016	ND	0.0956		mg/Kg-dry	1	3/12/2014 11:03:00 PM
Aroclor 1221	ND	0.0956		mg/Kg-dry	1	3/12/2014 11:03:00 PM
Aroclor 1232	ND	0.0956		mg/Kg-dry	1	3/12/2014 11:03:00 PM
Aroclor 1242	ND	0.0956		mg/Kg-dry	1	3/12/2014 11:03:00 PM
Aroclor 1248	ND	0.0956		mg/Kg-dry	1	3/12/2014 11:03:00 PM
Aroclor 1254	516	95.6	D	mg/Kg-dry	1000	3/13/2014 10:28:00 AM
Aroclor 1260	ND	0.0956		mg/Kg-dry	1	3/12/2014 11:03:00 PM
Aroclor 1262	ND	0.0956		mg/Kg-dry	1	3/12/2014 11:03:00 PM
Aroclor 1268	ND	0.0956		mg/Kg-dry	1	3/12/2014 11:03:00 PM
Total PCBs	516	95.6	D	mg/Kg-dry	1000	3/13/2014 10:28:00 AM
Surr: Decachlorobiphenyl	108	50.2-159		%REC	1	3/12/2014 11:03:00 PM
Surr: Tetrachloro-m-xylene	92.7	60.3-134		%REC	1	3/12/2014 11:03:00 PM

### Sample Moisture (Percent Moisture)

Batch ID: R12990

Analyst: KZ

Percent Moisture	4.74			wt%	1	3/12/2014 3:42:40 PM
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**Qualifiers:** B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
RL Reporting Limit

D Dilution was required  
H Holding times for preparation or analysis exceeded  
ND Not detected at the Reporting Limit  
S Spike recovery outside accepted recovery limits



Date: 3/13/2014

**Work Order:** 1403091  
**CLIENT:** PBS Engineering & Environmental  
**Project:** U of Terry Hall

## QC SUMMARY REPORT

### Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: <b>MB-6851</b>	SampType: <b>MBLK</b>	Units: <b>mg/Kg</b>			Prep Date: <b>3/12/2014</b>			RunNo: <b>13019</b>			
Client ID: <b>MBLKS</b>	Batch ID: <b>6851</b>				Analysis Date: <b>3/12/2014</b>			SeqNo: <b>260691</b>			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.100									
Aroclor 1221	ND	0.100									
Aroclor 1232	ND	0.100									
Aroclor 1242	ND	0.100									
Aroclor 1248	ND	0.100									
Aroclor 1254	ND	0.100									
Aroclor 1260	ND	0.100									
Aroclor 1262	ND	0.100									
Aroclor 1268	ND	0.100									
Total PCBs	ND	0.100									
Surr: Decachlorobiphenyl	45.7		50.00		91.5	50.2	159				
Surr: Tetrachloro-m-xylene	40.7		50.00		81.5	60.3	134				

Sample ID: <b>LCS-6851</b>	SampType: <b>LCS</b>	Units: <b>mg/Kg</b>				Prep Date: <b>3/12/2014</b>			RunNo: <b>13019</b>		
Client ID: <b>LCSS</b>	Batch ID: <b>6851</b>					Analysis Date: <b>3/12/2014</b>			SeqNo: <b>260692</b>		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.981	0.100	1.000	0	98.1	65	135				
Aroclor 1260	0.989	0.100	1.000	0	98.9	65	135				
Surr: Decachlorobiphenyl	47.0		50.00		94.0	50.2	159				
Surr: Tetrachloro-m-xylene	43.2		50.00		86.5	60.3	134				

Sample ID: <b>1403105-001AMS</b>	SampType: <b>MS</b>	Units: <b>mg/Kg-dry</b>				Prep Date: <b>3/12/2014</b>			RunNo: <b>13019</b>		
Client ID: <b>BATCH</b>	Batch ID: <b>6851</b>	Analysis Date: <b>3/13/2014</b>						SeqNo: <b>260702</b>			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	1.11	0.113	1.129	0	98.1	65	135				
Aroclor 1260	1.17	0.113	1.129	0	103	65	135				

**Qualifiers:**

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 3/13/2014

**Work Order:** 1403091  
**CLIENT:** PBS Engineering & Environmental  
**Project:** U of Terry Hall

**QC SUMMARY REPORT**  
**Polychlorinated Biphenyls (PCB) by EPA 8082**

Sample ID: 1403105-001AMS		SampType: MS		Units: mg/Kg-dry		Prep Date: 3/12/2014			RunNo: 13019		
Client ID: BATCH		Batch ID: 6851					Analysis Date: 3/13/2014			SeqNo: 260702	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Surr: Decachlorobiphenyl	53.1		56.46		94.1	50.2	159				
Surr: Tetrachloro-m-xylene	50.6		56.46		89.7	60.3	134				

Sample ID: <b>1403105-001AMSD</b>	SampType: <b>MSD</b>	Units: <b>mg/Kg-dry</b>				Prep Date: <b>3/12/2014</b>				RunNo: <b>13019</b>		
Client ID: <b>BATCH</b>	Batch ID: <b>6851</b>					Analysis Date: <b>3/13/2014</b>				SeqNo: <b>260703</b>		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Aroclor 1016	1.01	0.107	1.067	0	94.3	65	135	1.108	9.65	30	
Aroclor 1260	1.07	0.107	1.067	0	100	65	135	1.165	8.47	30	
Surr: Decachlorobiphenyl	51.2		53.36		95.9	50.2	159		0		
Surr: Tetrachloro-m-xylene	48.6		53.36		91.2	60.3	134		0		

Sample ID: <b>ICV-6851C (A1254)</b>		SampType: <b>ICV</b>			Units: <b>mg/Kg</b>		Prep Date: <b>3/13/2014</b>			RunNo: <b>13019</b>		
Client ID: <b>ICV</b>		Batch ID: <b>6851</b>			Analysis Date: <b>3/13/2014</b>			SeqNo: <b>260712</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Aroclor 1254	1.11	0.100	1.000	0	111	80	120				
Surr: Decachlorobiphenyl	50.3		50.00		101	50.2	159				
Surr: Tetrachloro-m-xylene	48.2		50.00		96.4	60.3	134				

Sample ID: <b>ICV-6851E (A1248)</b>		SampType: <b>ICV</b>		Units: <b>mg/Kg</b>		Prep Date: <b>3/13/2014</b>			RunNo: <b>13019</b>		
Client ID: <b>ICV</b>		Batch ID: <b>6851</b>					Analysis Date: <b>3/13/2014</b>			SeqNo: <b>260717</b>	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aroclor 1248	1.10	0.100	1.000	0	110	80	120				
Surr: Decachlorobiphenyl	50.3		50.00		101	50.2	159				
Surr: Tetrachloro-m-xylene	50.4		50.00		101	60.3	134				

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 3/13/2014

Work Order: 1403091  
CLIENT: PBS Engineering & Environmental  
Project: U of Terry Hall

**QC SUMMARY REPORT**  
**Polychlorinated Biphenyls (PCB) by EPA 8082**

Sample ID: <b>ICV-6851E (A1248)</b>		SampType: <b>ICV</b>		Units: <b>mg/Kg</b>		Prep Date: <b>3/13/2014</b>			RunNo: <b>13019</b>		
Client ID: <b>ICV</b>		Batch ID: <b>6851</b>					Analysis Date: <b>3/13/2014</b>			SeqNo: <b>260717</b>	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits





## Sample Log-In Check List

Client Name: **PBS**  
 Logged by: **Chelsea Ward**

Work Order Number: **1403091**  
 Date Received: **3/11/2014 9:37:00 AM**

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐  
 2. How was the sample delivered? Client

### Log In

3. Coolers are present? Yes ☐ No ☒ NA ☐  
**Bulk Material**  
 4. Shipping container/cooler in good condition? Yes ☒ No ☐  
 5. Custody seals intact on shipping container/cooler? Yes ☐ No ☐ Not Required ☒  
 6. Was an attempt made to cool the samples? Yes ☐ No ☐ NA ☒  
 7. Were all coolers received at a temperature of >0°C to 10.0°C? Yes ☐ No ☐ NA ☒  
 8. Sample(s) in proper container(s)? Yes ☒ No ☐  
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐  
 10. Are samples properly preserved? Yes ☒ No ☐  
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐  
 12. Is the headspace in the VOA vials? Yes ☐ No ☐ NA ☒  
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐  
 14. Does paperwork match bottle labels? Yes ☒ No ☐  
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐  
 16. Is it clear what analyses were requested? Yes ☒ No ☐  
 17. Were all holding times able to be met? Yes ☒ No ☐

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:  Date:   
 By Whom:  Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person  
 Regarding:   
 Client Instructions:

19. Additional remarks:

### Item Information

# Chain of Custody Record



1311 N. 35th Street  
Seattle, WA 98103

Tel: 206-352-3790  
Fax: 206-352-7178

Client:  
Address:  
City, State, Zip

PBS Engineering Enviro  
2517 Eastlake Ave #100  
Seattle WA  
Tel: 206 733 9639

Project Name:  
Location:  
Collected by:

Uof Terry Hall  
Seattle, WA  
Furman Fletcher

Laboratory Project No (Internal):

1403091

Date: 3/10/14

Page: 1 of 1

Reports To (PM):

Fax:

Email:

Project No: 40035-590

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260) GC/MS by EPA 8221b	Gasoline Range Organics BTEX by EPA 8210	Hydrocarbon Identification (HID)	PAH (EPA 8270 - SIM)	CI Herbicides (EPA 8081)	Metal* (EPA 8210 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)**	Comments/Depth
1 core 1 (NW)	2/19/14											each core sample
2 core 2 (NE)												needs to be broken
3 core 3 (center)												down and fully
4 core 4 (E)												homogenized.
5 core 5 (W)												
6												
7												
8												
9												
10												

\*Metals Analysis (Circle): MTCA-5 RCRA-6 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti U V Zn

\*\*Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Special Remarks:

Relinquished  
x  
Megan  
Date/Time: 3/11/14

Received  
x  
J. J. J.  
Date/Time: 3/11/14 9:37

Received  
x  
J. J. J.  
Date/Time: 3/11/14 9:37

TAT -> Next Day 2 Day 3 Day 4 Day 5 Day STD

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**FINAL REPORT  
PROPOSED PCB REMEDIATION  
IN THE TERRY-LANDER TRANSFORMER VAULT,  
UNIVERSITY OF WASHINGTON**

**For**

**UNIVERSITY OF WASHINGTON  
JOB NO. 00681-053-005  
February 4, 1993**

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 **DAMES & MOORE**

**FINAL REPORT  
PROPOSED PCB REMEDIATION  
IN THE TERRY-LANDER TRANSFORMER VAULT,  
UNIVERSITY OF WASHINGTON**

**EXECUTIVE SUMMARY**

This report presents the findings of a remedial investigation of PCB contamination undertaken by Dames & Moore at the request of the University of Washington. PCB contamination was initially detected in samples collected from a transformer vault serving the Terry-Lander Dormitory in the spring of 1990. The contamination found in the vault is the result of a spill that occurred in 1968, when the transformer currently in service was installed in the vault. During the installation, the transformer was reportedly dropped, causing a fin to rupture and releasing an unknown quantity of transformer fluid containing polychlorinated biphenyls (PCBs) to the vault floor.

The transformer vault occupies a portion of a mechanical room which is located next to a basement parking area. The transformer vault is located in the southwest corner of the mechanical room. The walls of the transformer vault are constructed of cinder block, and extend from the floor to the ceiling on the south and west sides and to a height of 18 inches on the north and east sides of the vault. The 18 inch cinder block walls are topped with a six-inch concrete curb and a metal fence which extends from the top of the curb to the ceiling. Access is provided by a metal locking door and wooden stairs located at the northwest corner of the vault.

The floor of the transformer vault is a concrete slab which rests on compacted fill 18 inches below the mechanical room floor. The gap between the edges of the floor slab and the vault walls is filled by a one-inch thick fiber expansion strip. The transformer and two switchgear boxes occupy a six-inch thick concrete pad which lies on the floor slab in the center of the transformer vault. The south wall of the transformer vault includes a structural column that is a supporting member of the building. The column is 18 inches wide and is set in a 6 foot by 6 foot concrete footing located approximately one foot below the surface of the floor slab. The edge of the column projects into the transformer vault approximately one foot.

In the spring of 1990, an investigation was initiated to determine the extent of PCB contamination in the vault resulting from the 1968 spill. In order to more fully determine the extent of PCB contamination in the transformer vault and surrounding areas, field personnel collected samples from the area of the vault on September 14, 15, and 16, 1991. Additional samples were collected from under the vault floor slab on March 23, 1992. These investigations found PCB contamination of the vault floor and the lower portions of the vault walls. PCBs were also found in a structural column set in the south wall of the vault. Tracking had apparently spread the contamination to concrete surfaces of the adjoining mechanical room, as well. The fiber expansion strip surrounding the floor slab exhibited high concentrations of PCBs, and had evidently acted as an avenue for transport of contamination to subsurface soils, as well as to the footing supporting the structural column. Soil contamination was found to extend to a depth of six feet.

The University proposes the following remedial actions to address the contamination in the Terry-Lander Dormitory vault:

- Remove and dispose of the highly contaminated edges of the concrete floor slab which are presently in contact with the fiber expansion strip,
- Remove and dispose of the fiber expansion strip,
- Remove surface contamination from concrete surfaces in and around the vault through chemical or mechanical cleaning,
- Decontaminate the electrical equipment, and
- Encapsulate exposed concrete surfaces that are contaminated above 10  $\mu\text{g}/100 \text{ cm}^2$

The University will also establish institutional controls to restrict access to the vault and assure that contaminated materials are not disturbed in the future. In addition, modifications will be completed to upgrade the fire protection and HVAC systems in the vault.

The proposed remedial action will accomplish the following:

- Prevent human exposure to PCB contamination in the vicinity of the vault;
- Eliminate the most significant contaminant sources, and
- Prevent or limit the migration of contamination from the vault to the soil or the immediate surroundings.

The proposed remedial action will also be consistent with actions taken at other sites in Region X where structural constraints have prevented achieving the cleanup standards of the PCB Spill Cleanup Policy.

The University is currently evaluating opportunities for scheduling remediation. Scheduling is constrained by the projected use of the dormitory. At this time, it appears that remediation could begin as early as July, 1993. The next available opportunity would be in the summer of 1994. The estimated construction cost of the proposed remedial action is approximately \$163,000. The total project cost is approximately \$725,000, including the cost of site investigation, remedial design, construction monitoring, and post-remediation reporting.

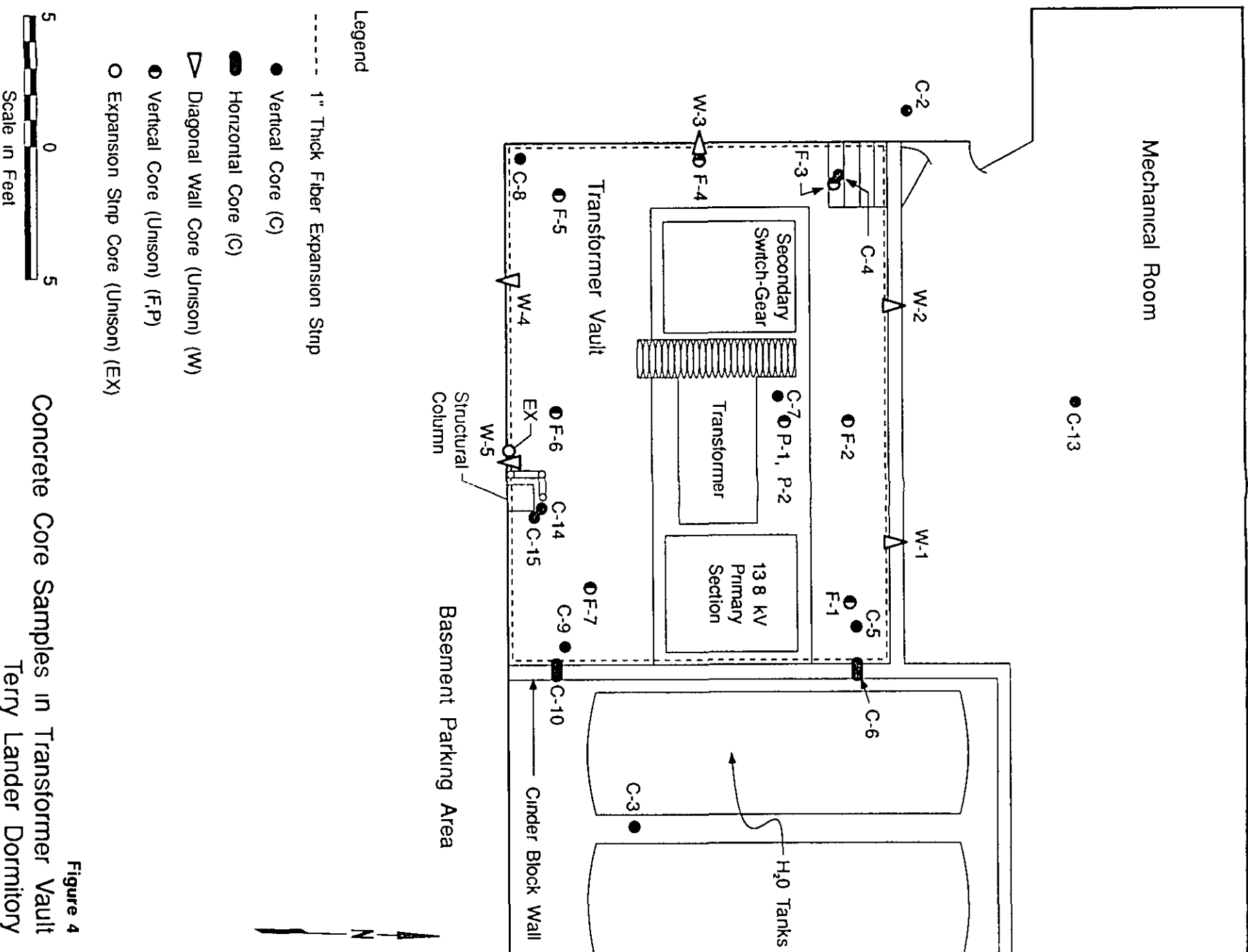
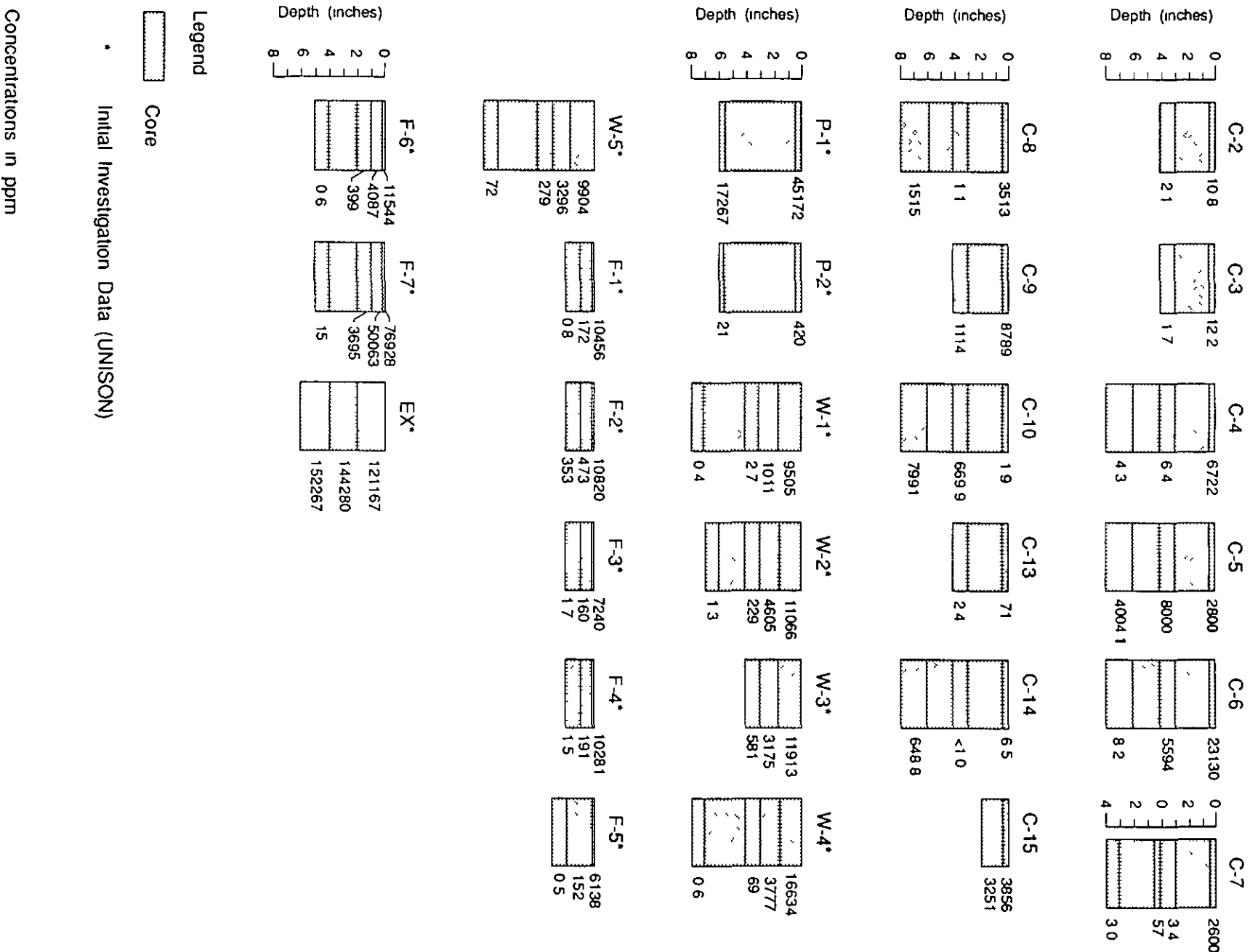


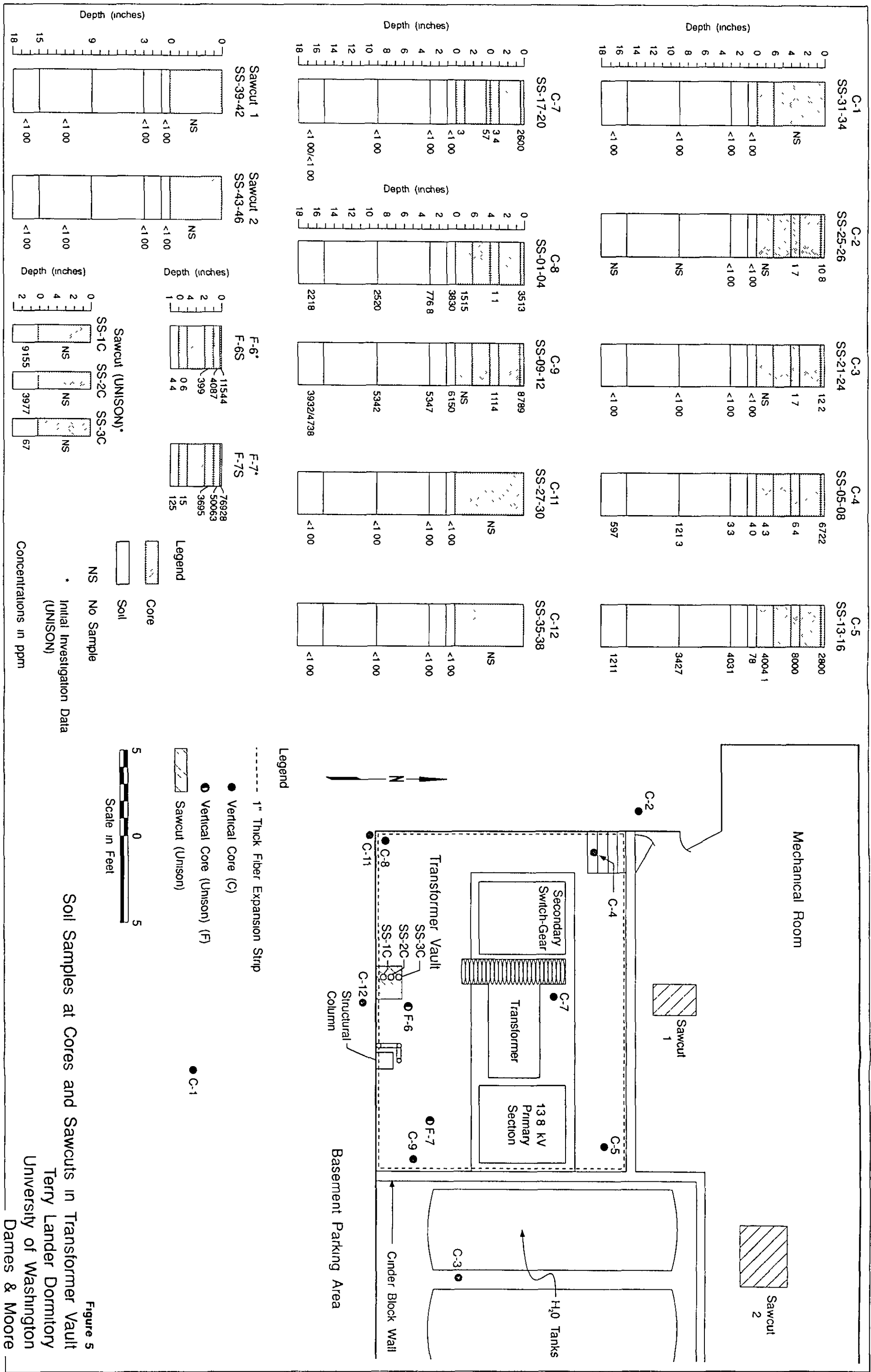


0 600 1200  
 Approximate Scale in Feet

SOURCE: University of Washington Campus and Vicinity Map, 1991.

Figure 1  
 Site Location Map  
 Terry-Lander Building  
 University of Washington  
 Dames & Moore





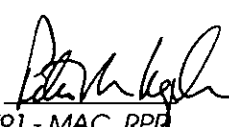


**APPENDIX D**  
**LABORATORY ANALYTICAL RESULTS**  
**AND**  
**CHAIN-OF-CUSTODY FORMS**

**ANALYTICAL  
RESOURCES  
INCORPORATED**Analytical  
Chemists &  
Consultants**ORGANICS ANALYSIS DATA SHEET**  
PCB Analysis by GC/ECD

QC Report 9058-Dames &amp; Moore

Matrix Wipes

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)Data Release Authorized   
Report prepared 10/08/91 - MAC RPRGPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No**Reported in Total µg**

Sample #	METHOD BLANK	METHOD BLANK	WS-01-091491	WS-02-091491	WS-03-091491
ARI Lab ID	MBW 9/23	MBW2W 9/23	9058 A	9058 B	9058 C
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/25/91	09/25/91	09/25/91	09/25/91	09/25/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10 ml	10 ml	10 ml	10 ml	10 ml
Dilution	11	11	11	11	11
1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	10 U	10 U	31	10 U	33
1260	10 U	10 U	1.6	10 U	11
TCMX Surrogate %	102%	102%	99.2%	103%	91.1%
DCBP Surrogate %	115%	115%	104%	97.3%	91.4%

Sample #	WS-04-091491	WS-05-091491	WS-06-091491	WS-07-091491	WS-08-091491
ARI Lab ID	9058 D	9058 E	9058 F	9058 G	9058 H
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/25/91	09/26/91	09/26/91	09/26/91	09/26/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10ml	10ml	10ml	10ml	10ml
Dilution	11	11	11	11	11
1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	9.9	S	67X	110X	12
1260	13	S	50 U	55 U	16
TCMX Surrogate %	91.0%	99.9%	78.4%	97.6%	107%
DCBP Surrogate %	102%	138%	89.6%	115%	110%

**Data Qualifiers**

Value	If the result is a value greater than or equal to the detection limit report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required

**ANALYTICAL  
RESOURCES  
INCORPORATED****ORGANICS ANALYSIS DATA SHEET**  
PCB Analysis by GC/ECDAnalytical  
Chemists &  
Consultants**QC Report 9058-Dames & Moore**

Matrix Wipes

Date Sampled 09/14/91-09/16/91

Date Received 09/17/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)Data Release Authorized *[Signature]*  
Report prepared 10/08/91 - MAC RFRGPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No**Reported in Total µg**

Sample #	WS-09-091491	WS-10-091491	WS-11-091491	WSB-X1-091491	WS-12-091491
ARI Lab ID	9058 I	9058 J	9058 K	9058 L	9058 M
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10 ml	10 ml	10 ml	10 ml	10 ml
Dilution	1:1	1:1	1:1	1:1	1:1

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	10 U	8.7	10 U	10 U	12
1260	2.4	30	2.1	10 U	16

TCMX Surrogate %	107%	98.7%	106%	110%	115%
DCBP Surrogate %	115%	99.2%	110%	120%	110%

Sample #	WSX-08-091491	WS-13-091591	WS-14-091591	WS-15-091591	WS-16-091591
ARI Lab ID	9058 N	9058 O	9058 P	9058 Q	9058 R
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10ml	10ml	10ml	10ml	10ml
Dilution	1:1	1:1	1:1	1:1	1:1

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	3.3	S	S	S	S
1260	3.1	S	S	S	S

TCMX Surrogate %	115%	111%	110%	104%	115%
DCBP Surrogate %	113%	151%	123%	125%	144%

**Data Qualifiers**

Value	If the result is a value greater than or equal to the detection limit report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for, but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required

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PCB Analysis by GC/ECDAnalytical  
Chemists &  
Consultants

QC Report 9058-Dames &amp; Moore

Matrix Wipes

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)Data Release Authorized *[Signature]*  
Report prepared 10/08/91 - MAC RPRGPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No**Reported in Total µg**

Sample #	WS-17-091591	WSB-XX-091591	WS-18-091591	WS-19-091591	WS-20-091591
ARI Lab ID	9058 S	9058 T	9058 U	9058 V	9058 W
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10 ml	10 ml	10 ml	10 ml	10 ml
Dilution	11	11	11	11	11

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	13	10 U	70	29	79
1260	54	10 U	10 U	10 U	11

TCMX Surrogate %	109%	107%	108%	110%	114%
DCBP Surrogate %	119%	113%	115%	117%	116%

Sample #	WSX-20-091591	WS-21-091591	WS-22-091591	WS-23-091591	WS-24-091591
ARI Lab ID	9058 X	9058 Y	9058 Z	9058 AA	9058 AB
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10ml	10ml	10ml	10ml	10ml
Dilution	11	11	11	11	11

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	7.8	S	230X	59	11
1260	1.6	S	15 U	81	58

TCMX Surrogate %	120%	104%	121%	115%	120%
DCBP Surrogate %	120%	S	130%	133%	123%

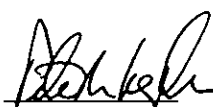
**Data Qualifiers**

Value	If the result is a value greater than or equal to the detection limit, report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for, but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required

**ANALYTICAL  
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INCORPORATED**Analytical  
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PCB Analysis by GC/ECD

QC Report 9058-Dames &amp; Moore

Matrix: Wipes

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)Data Release Authorized   
Report prepared 10/08/91 - MAC RFRGPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

## Reported in Total µg

Sample #:	WS-25-091591	WS-26-091591	WS-27-091591	WS-28-091591	WS-29-091591
ARI Lab ID	9058 AC	9058 AD	9058 AE	9058 AF	9058 AG
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10 ml	10 ml	10 ml	10 ml	10 ml
Dilution	1:1	1:1	1:1	1:1	1:1
1016/1242	10 U	10 U	6.3	10 U	10 U
1248	10 U	10 U	15 U	10 U	10 U
1254	S	49	S	6.2	13
1260	S	22	S	10 U	10 U
TCMX Surrogate %	133%	121%	120%	123%	117%
DCBP Surrogate %	150%	130%	135%	132%	128%

Sample #:	WS-30-091591	WSX-3-091591	WS-05-091491DL	WS-06-091491DL	WS-07-091491DL
ARI Lab ID	9058 AH	9058 AI	9058 E dl	9058 F dl	9058 G dl
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/26/91	09/26/91	10/02/91	09/30/91	09/30/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10ml	10ml	10ml	10ml	10ml
Dilution	1:1	1:1	1:100	1:10	1:10
1016/1242	10 U	10 U	100 U	10 U	10 U
1248	10 U	10 U	100 U	10 U	10 U
1254	100X	S	770	91	150
1260	50 U	S	300 U	45 U	40 U
TCMX Surrogate %	116%	130%	D	97.9%	113%
DCBP Surrogate %	134%	144%	D	94.4%	121%

## Data Qualifiers

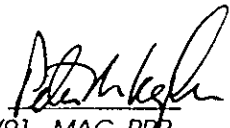
Value	If the result is a value greater than or equal to the detection limit, report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required

**ANALYTICAL  
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PCB Analysis by GC/ECDAnalytical  
Chemists &  
Consultants**QC Report 9058-Dames & Moore**

Matrix Wipes

Date Sampled 09/14/91-09/16/91

Date Received 09/17/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)Data Release Authorized   
Report prepared 10/08/91 - MAC RPRGPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No**Reported in Total  $\mu$ g**

Sample #:	WS-13-091591DL	WS-14-091591DL	WS-15-091591DL	WS-16-091591DL	WS-21-091591DL
ARI Lab ID	9058 OdI	9058 PdI	9058 QdI	9058 RdI	9058 YdI
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/30/91	10/02/91	10/02/91	10/02/91	10/03/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10 ml	10 ml	10 ml	10 ml	10 ml
Dilution	1 10	1 100	1 10	1 100	1 1000

1016/1242	10 U	100 U	10 U	100 U	1000 U
1248	10 U	100 U	10 U	100 U	1000 U
1254	800	2800	1000	2400	30000
1260	50 U	400 U	45 U	500 U	6000 U

TCMX Surrogate %	126%	D	116%	D	D
DCBP Surrogate %	146%	D	137%	D	D

Sample #:	WS-22-091591DL	WS-25-091591DL	WS-27-091591DL	WS-30-091591DL	WSX-30-091591DL
ARI Lab ID	9058 ZdI	9058 ACdI	9058 AEdI	9058 AHdI	9058 AIdI
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	10/01/91	10/01/91	10/01/91	10/01/91	10/01/91
Sample Amount	1 Wipe	1 Wipe	1 Wipe	1 Wipe	1 Wipe
Final volume	10ml	10ml	10ml	10ml	10ml
Dilution	1 10	1 10	1 10	1 10	1 10

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	320	880	160	160	360
1260	16 U	82 U	60 U	90 U	90 U

TCMX Surrogate %	79.3%	91.0%	75.5%	75.5%	85.1%
DCBP Surrogate %	132%	165%	131%	131%	139%

**Data Qualifiers**

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J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for, but not detected at the given detection limit
X	Indicates value above the linear range of the detector Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector Dilution required

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PCB Analysis by GC/ECD

QC Report 9058-Dames &amp; Moore

Matrix Waters

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)Data Release Authorized *[Signature]*  
Report prepared 10/08/91 - MAC RPIGPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

## Reported in ppm (mg/L)

Sample #:	METHOD BLANK	CSDB-06-091591	CSDB-07-09159	CSDB-08-091591	CSDB-09-091591
ARI Lab ID	MB 9/21	9058AJ	9058 AK	9058 AL	9058 AM
Date Extracted	09/21/91	09/21/91	09/21/91	09/21/91	09/21/91
Date Analyzed	09/25/91	09/26/91	09/26/91	09/26/91	09/26/91
Sample Amount	5.0g	5.0g	5.0g	5.0g	5.0g
Final volume	40ml	40ml	40ml	40ml	40ml
Dilution	11	11	11	11	11

1016/1242	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1248	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1254	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1260	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

TCMX Surrogate %	98.7%	106%	96.2%	94.5%	85.8%
DCBP Surrogate %	109%	95.1%	77.4%	80.2%	71.1%

Sample #:	CSDB-09-91591 ms	CSDB-09-091591msd	CSDB-01-091491	CSDB-02-091491
ARI Lab ID	9058 AM ms	9058 AMmsd	9058 AN	9058 AO
Date Extracted	09/21/91	09/21/91	09/21/91	09/21/91
Date Analyzed	09/26/91	09/26/91	09/26/91	09/26/91
Sample Amount	5.0g	5.0g	5.0g	5.0g
Final volume	40ml	40ml	40ml	40ml
Dilution	11	11	11	11

1016/1242	-	-	1.0 U	1.0 U
1248	1.0 U	1.0 U	1.0 U	1.0 U
1254	1.0 U	1.0 U	1.0 U	1.0 U
1260	1.0 U	1.0 U	1.0 U	1.0 U

TCMX Surrogate %	93.6%	89.9%	101%	89.9%
DCBP Surrogate %	70.8%	70.2%	90.5%	77.4%

## Data Qualifiers

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U	Indicates compound was analyzed for, but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required

**ANALYTICAL  
RESOURCES  
INCORPORATED**Analytical  
Chemists &  
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PCB Analysis by GC/ECD

QC Report 9087-Dames &amp; Moore

Matrix Cement

Date Sampled N/A  
Date Received 09/23/91333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)Data Release Authorized *[Signature]*  
Report prepared 10/09/91 - MAC RPRGPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

Reported in ppm (mg/kg)

Sample #:	Method Blank	Method Blank	CS-01-091491	CS-01-091491ms	CS-01-091491msd
ARI Lab ID	MB 9/26	MB2 9/26	9087 A	9087 Ams	9087 Amsd
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	09/27/91	10/02/91	09/28/91	09/28/91	09/28/91
Dry Weight	4.75g	4.75 g	4.88 g	4.88 g	4.87 g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	11	11	11	11	11

1016/1242	10 U	10 U	13	-	-
1248	10 U	10 U	20 U	20 U	20 U
1254	10 U	10 U	S	S	S
1260	10 U	10 U	S	S	S

TCMX Surrogate %	109%	118%	93.2%	98.0%	91.9%
DCBP Surrogate %	122%	145%	116%	118%	110%

Sample #	CS-02-091491	CS-03-091491	CS-04-091491	CS-05-091491	CS-06-091491
ARI Lab ID	9087 B	9087 C	9087 D	9087 E	9087 F
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	09/28/91	09/28/91	09/28/91	09/28/91	09/28/91
Dry Weight	4.70 g	4.74 g	4.79 g	4.78 g	4.71 g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	11	11	11	11	11

1016/1242	10 U	15	10 U	10 U	68
1248	10 U	30 U	10 U	10 U	12 U
1254	11	S	65	10 U	S
1260	10 U	S	10 U	10 U	15 U

TCMX Surrogate %	118%	118%	115%	117%	127%
DCBP Surrogate %	116%	121%	116%	114%	128%

## Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required



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Chemists &  
Consultants

QC Report 9087-Dames &amp; Moore

Matrix Cement

Date Sampled N/A  
Date Received 09/23/91333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized

Report prepared 10/09/91 - MAC RPI

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

## Reported in ppm (mg/kg)

Sample #:	CS-07-091491	CS-08-091491	CS-09-091491	CS-10-091491	CS-11-091491
ARI Lab ID	9087 G	9087 H	9087 I	9087 J	9087 K
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	09/28/91	09/28/91	09/30/91	09/30/91	09/30/91
Dry Weight	4.92 g	4.90 g	4.86 g	4.77 g	4.80 g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	1:10	1:10	1:1	1:1	1:10

1016/1242	56	51	10 U	9.9	91
1248	10 U	75 U	10 U	18 U	180 U
1254	3100X	2800X	19	S	S
1260	60 U	50 U	10 U	15 U	200 U

TCMX Surrogate %	125%	134%	123%	143%	176%
DCBP Surrogate %	148%	154%	112%	133%	181%

Sample #	CS-12-091491	CS-13-091491	CS-14-091491	CS-15-091491	CS-16-091491
ARI Lab ID	9087 L	9087 M	9087 N	9087 O	9087 P
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	09/30/91	09/30/91	09/30/91	09/30/91	09/30/91
Dry Weight	4.87 g	4.83 g	4.83 g	4.70 g	4.60 g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	1:10	1:10	1:1	1:1	1:1

1016/1242	130	94	0.84J	22	10 U
1248	260 U	150 U	18 U	44 U	10 U
1254	S	S	8.2	S	6.4
1260	S	75 U	10 U	S	10 U

TCMX Surrogate %	187%	173%	144%	140%	136%
DCBP Surrogate %	210%	162%	125%	141%	117%

## Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required



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PCB Analysis by GC/ECD


Analytical  
Chemists &  
Consultants

QC Report: 9087-Dames & Moore

Matrix: Cement

Date Sampled: N/A  
Date Received: 09/23/91

333 Ninth Ave. North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized   
Report prepared: 10/09/91 - MAC RPK

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #:	CS-17-091491	CS-18-091491	CS-19-091491	CS-20-091491	CS-21-091491
ARI Lab ID	9087 Q	9087 R	9087 S	9087 T	9087 U
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	09/30/91	09/30/91	09/30/91	09/30/91	09/30/91
Dry Weight	4.73 g	4.85 g	4.81 g	4.82 g	4.70 g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	1:1	1:1	1:1	1:10	1:1

1016/1242	10 U	10 U	10 U	89	14
1248	10 U	10 U	10 U	150 U	27 U
1254	4.3	27	2.4	S	S
1260	10 U	44	10 U	S	S

TCMX Surrogate %	129%	124%	129%	143%	125%
DCBP Surrogate %	120%	116%	117%	193%	128%

Sample #:	CS-22-091491	CS-23-091491	CS-24-091491	CS-25-091491	CS-26-091491
ARI Lab ID	9087 V	9087 W	9087 X	9087 Y	9087 Z
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	09/30/91	09/30/91	09/30/91	09/30/91	09/30/91
Dry Weight:	4.83 g	4.74 g	4.69 g	4.68 g	4.66 g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	1:10	1:10	1:1	1:1	1:1

1016/1242	100	100	41	10 U	10 U
1248	200 U	200 U	60 U	10 U	10 U
1254	S	S	S	S	34
1260	S	S	10 U	22 U	10 U

TCMX Surrogate %	156%	154%	135%	129%	132%
DCBP Surrogate %	227%	169%	129%	123%	119%

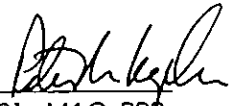
**Data Qualifiers**

Value	If the result is a value greater than or equal to the detection limit report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required

**ANALYTICAL  
RESOURCES  
INCORPORATED****ORGANICS ANALYSIS DATA SHEET**  
PCB Analysis by GC/ECDAnalytical  
Chemists &  
Consultants

QC Report 9087-Dames &amp; Moore

Matrix Cement

Date Sampled N/A  
Date Received 09/23/91333 Ninth Ave North  
Seattle WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)Data Release Authorized   
Report prepared 10/09/91 - MAC RPRGPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

## Reported in ppm (mg/kg)

Sample #	CS-27-091591	CS-28-091591	CS-29-091591	CS-30-091591	CS-31-091591
ARI Lab ID	9087 AA	9087 AB	9087 AC	9087 AD	9087 AE
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	09/30/91	09/30/91	09/30/91	09/30/91	09/30/91
Dry Weight	4.67 g	4.70 g	4.81 g	4.70 g	4.86 g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	1:1	1:1	1:1	1:1	1:1

1016/1242	0.93J	1.0U	1.0U	1.0U	1.0U
1248	1.5U	1.0U	1.0U	1.0U	1.0U
1254	57	30	71	17	70
1260	2.0U	1.0U	5.1	1.0U	3.8

TCMX Surrogate %	131%	131%	118%	125%	115%
DCBP Surrogate %	121%	121%	118%	120%	113%

Sample #	CS-32-091591	CS-01-091491dl	CS-01-091491msdl	CS-01-091491msddl	CS-03-091491dl
ARI Lab ID	9087 AF	9087 Adl	9087 Amsdl	9087 msddl	9087 Cdl
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	09/30/91	10/02/91	10/02/91	10/03/91	10/03/91
Dry Weight	4.71 g	4.88 g	4.88 g	4.87 g	4.74 g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	1:1	1:100	1:100	1:100	1:50

1016/1242	1.0U	100U	-	-	50U
1248	1.0U	100U	100U	100U	50U
1254	2.1	3100	3200	3500	1500
1260	1.0U	230U	230U	250	75U

TCMX Surrogate %	121%	114%	120%	115%	120%
DCBP Surrogate %	108%	160%	168%	169%	122%

## Data Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required



**ANALYTICAL  
RESOURCES  
INCORPORATED**

**ORGANICS ANALYSIS DATA SHEET**  
PCB Analysis by GC/ECD

QC Report. 9087-Dames & Moore

Analytical  
Chemists &  
Consultants

Matrix. Cement

Date Sampled N/A  
Date Received 09/23/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized *[Signature]*  
Report prepared 10/09/91 - MAC. RRR

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #	CS-06-091491dl	CS-07-091491dl	CS-08-091491dl	CS-10-091491dl	CS-11-091491dl
ARI Lab ID	9087 Fdl	9087 Gdl	9087 Hdl	9087 Jdl	9087 Kdl
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	10/02/91	10/02/91	10/02/91	10/02/91	10/02/91
Dry Weight	4 71 g	4 92 g	4 90 g	4 77 g	4 80 g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	1 10	1 100	1 100	1 10	1 100

1016/1242	10 U	100 U	100 U	15 U	97
1248	15 U	120 U	100 U	22 U	190 U
1254	640	3800	3200	660	7900
1260	25 U	140 U	130 U	25 U	320 U

TCMX Surrogate %	123%	113%	141%	113%	129%
DCBP Surrogate %	159%	145%	137%	147%	181%

Sample #	CS-12-091491dl	CS-13-091491dl	CS-15-091491dl	CS-20-091591dl	CS-21-091591dl
ARI Lab ID	9087 Ldl	9087 Mdl	9087 Odl	9087 Tdl	9087 Udl
Date Extracted	09/26/91	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed	10/02/91	10/02/91	10/02/91	10/02/91	10/02/91
Dry Weight	4 87 g	4.83 g	4 70 g	4 82 g	4 70 g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	1 1000	1 100	1 100	1 100	1 10

1016/1242	1000 U	97	100 U	100 U	25 U
1248	1000 U	190 U	100 U	130 U	35 U
1254	23000	5500	6700	8700	1100
1260	1000 U	200 U	250 U	570 U	50 U

TCMX Surrogate %	D	137%	112%	D	111%
DCBP Surrogate %	D	171%	159%	D	145%

**Data Qualifiers**

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X	Indicates value above the linear range of the detector Dilution required
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S	Indicates no value reported due to saturation of the detector Dilution required



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Consultants

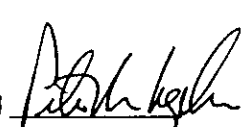
**ORGANICS ANALYSIS DATA SHEET**  
PCB Analysis by GC/ECD

**QC Report: 9087-Dames & Moore**

**Matrix: Cement**

Date Sampled N/A  
Date Received 09/23/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized   
Report prepared 10/09/91 - MAC RPR

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #:	CS-22-091591dl	CS-23-091591dl	CS-24-091591dl	CS-25-091591dl
ARI Lab ID:	9087 Vdl	9087 Wdl	9087 Xdl	9087 Ydl
Date Extracted:	09/26/91	09/26/91	09/26/91	09/26/91
Date Analyzed:	10/02/91	10/02/91	10/02/91	10/02/91
Dry Weight:	4.83 g	4.74 g	4.69 g	4.68 g
Final volume:	40 ml	40 ml	40 ml	40 ml
Dilution	1.500	1:100	1:100	1:100
1016/1242	500 U	140	100 U	100 U
1248	500 U	250 U	100 U	100 U
1254	2700	7900	4000	2600
1260	500 U	330 U	170 U	330 U
TCMX Surrogate %	D	D	D	D
DCBP Surrogate %	D	D	D	D

**Data Qualifiers**

Value	If the result is a value greater than or equal to the detection limit, report the value
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D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required

**FORM 1-PCB**



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333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

**PCB MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY**

ARI Job No 9087

Client Dames&Moore  
Project 0061-053-005

Client ID: CS-01-091491

ARI Sample No: A

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONC (mg/kg)	MS CONC (mg/kg)	MS % REC
1242	0.820	12.70	12.95	30

COMPOUND	SPIKE ADDED (mg/kg)	MSD CONC (mg/kg)	MSD % REC	% RPD
1242	0.821	13.20	60.9	67.4

**Comments:** Percent recoveries are not accurate due to the high amount of 1242 contamination in the sample



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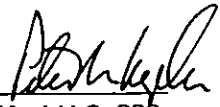
QC Report 9058-Dames & Moore

Matrix Soils

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91

Analytical  
Chemists &  
Consultants

333 Ninth Ave North  
Seattle WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized   
Report prepared 10/07/91 - MAC RPR

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #:	Method Blank	Method Blank	Method Blank	SS-09-091591	SS-10-091591
ARI Lab ID	mb9/21	mb1 9/23	mb2 9/23	9058AP	9058AQ
Date Extracted	09/21/91	09/23/91	09/23/91	09/21/91	09/21/91
Date Analyzed	09/25/91	09/25/91	09/25/91	09/26/91	09/26/91
Dry Weight	4.75g	4.75g	4.75g	4.88g	4.83g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	11	11	11	11	11

1016/1242	10 U	10 U	10 U	50	47
1248	10 U	10 U	10 U	80 U	80 U
1254	10 U	10 U	10 U	S	S
1260	10 U	10 U	10 U	S	S

TCMX Surrogate %	85.0%	106%	112%	117%	118%
DCBP Surrogate %	72.4%	116%	123%	137%	141%

Sample #:	SSX-10-091591	SS-11-091591	SS-12-091591	SS-13-091591	SS-14-091591
ARI Lab ID	9058AR	9058AS	9058AT	9058AU	9058AV
Date Extracted	09/21/91	09/21/91	09/21/91	09/21/91	09/21/91
Date Analyzed	09/26/91	09/26/91	09/26/91	09/26/91	09/27/91
Dry Weight	4.92g	4.83g	4.91g	4.82g	4.63g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	11	11	11	11	11

1016/1242	42	32	38	11 U	31
1248	70 U	55 U	65 U	20 U	40 U
1254	S	S	S	78	S
1260	S	S	S	30 U	S

TCMX Surrogate %	112%	112%	113%	105%	113%
DCBP Surrogate %	133%	131%	134%	128%	134%

**Data Qualifiers**

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X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required



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PCB Analysis by GC/ECD

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**QC Report 9058-Dames & Moore**

Matrix: Soils

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621 6490  
(206) 621-7523 (FAX)

Data Release Authorized *Peter H. Kahl*  
Report prepared 10/07/91 - MAC RPR

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #:	SS-15-091591	SS-16-091591	SS-17-091591	SS-18-091591	SS-19-091591
ARI Lab ID	9058 AW	9058 AX	9058 AY	9058 AZ	9058 BA
Date Extracted	09/21/91	09/21/91	09/21/91	09/21/91	09/21/91
Date Analyzed	09/27/91	09/27/91	09/27/91	09/27/91	09/27/91
Dry Weight	4.67g	4.84g	4.55g	4.69g	4.91g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	1:1	1:1	1:1	1:1	1:1
1016/1242	27	11	10 U	10 U	10 U
1248	45 U	25 U	10 U	10 U	10 U
1254	S	S	10 U	10 U	10 U
1260	S	S	10 U	10 U	10 U
TCMX Surrogate %	113%	106%	99.9%	104%	102%
DCBP Surrogate %	133%	125%	116%	121%	119%

Sample #:	SS-20-091591	SSX-20-091591	SSX-20-091591 MS	SSX-20-091591 MSD	SS-21-091591
ARI Lab ID	9058 BB	9058 BC	9058 BC ms	9058 BC msd	9058 BD
Date Extracted	09/21/91	09/21/91	09/21/91	09/21/91	09/21/91
Date Analyzed	09/27/91	09/27/91	09/27/91	09/27/91	09/27/91
Dry Weight	4.75g	4.70g	4.75g	4.61g	4.76g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	1:1	1:1	1:1	1:1	1:1
1016/1242	10 U	10 U			10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	10 U	10 U	10 U	10 U	10 U
1260	10 U	10 U	10 U	10 U	10 U
TCMX Surrogate %	103%	99.2%	103%	99.3%	101%
DCBP Surrogate %	120%	119%	120%	119%	118%

**Data Qualifiers**

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X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
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**ORGANICS ANALYSIS DATA SHEET**  
PCB Analysis by GC/ECD

**QC Report. 9058-Dames & Moore**

**Matrix: Solis**

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized *Peter M. Keph*  
Report prepared 10/07/91 - MAC RPR

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #:	SS-22-091591	SS-23-091591	SS-24-091591	SS-25-091591	SS-26-091591
ARI Lab ID.	9058 BE	9058 BF	9058 BG	9058 BH	9058 BI
Date Extracted:	09/21/91	09/21/91	09/21/91	09/23/91	09/23/91
Date Analyzed:	09/27/91	09/27/91	09/27/91	09/27/91	09/27/91
Dry Weight:	4.71 g	4.56 g	4.70 g	4.77 g	4.75 g
Final volume:	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	1:1	1:1	1:1	1:1	1:1

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	10 U	10 U	10 U	10 U	10 U
1260	10 U	10 U	10 U	10 U	10 U

TCMX Surrogate %	98.4%	102%	98.9%	112%	116%
DCBP Surrogate %	118%	119%	116%	131%	135%

Sample #	SS-01-091491	SS-02-091491	SS-03-091491	SS-04-091491	SS-05-091491
ARI Lab ID.	9058 BJ	9058 BK	9058 BL	9058 BM	9058 BN
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/27/91	09/27/91	09/27/91	09/27/91	09/27/91
Dry Weight	4.66 g	4.62 g	4.78 g	4.62 g	4.79 g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	1:1	1:1	1:1	1:1	1:1

1016/1242	30	68	20	18	10 U
1248	50 U	15 U	35 U	35 U	10 U
1254	S	S	S	S	40
1260	S	S	S	S	10 U

TCMX Surrogate %	115%	141%	129%	126%	131%
DCBP Surrogate %	139%	162%	153%	146%	132%

**Data Qualifiers**

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X	Indicates value above the linear range of the detector Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector Dilution required



**ANALYTICAL  
RESOURCES  
INCORPORATED**

**ORGANICS ANALYSIS DATA SHEET**  
PCB Analysis by GC/ECD

**QC Report 9058-Dames & Moore**

Analytical  
Chemists &  
Consultants

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

**Matrix: Soils**

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91

Data Release Authorized *[Signature]*  
Report prepared 10/07/91 - MAC RHR

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #	SS-06-091491	SS-07-091491	SS-01-091491	SS-27-091691	SS-28-091691
ARI Lab ID	9058 BO	9058 BP	9058 BQ	9058 BR	9058 BS
Date Extracted:	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/27/91	09/27/91	09/27/91	09/27/91	09/27/91
Dry Weight:	4.84g	4.78g	4.88g	4.65g	4.70g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution:	1:1	1:1	1:1	1:1	1:1

1016/1242	10 U	13	7.0	10 U	10 U
1248	10 U	25 U	15 U	10 U	10 U
1254	3.3	98X	5	10 U	10 U
1260	10 U	35 U	20 U	10 U	10 U

TCMX Surrogate %	124%	119%	120%	124%	124%
DCBP Surrogate %	127%	123%	129%	133%	133%

Sample #:	SS-29-091691	SS-30-091691	SSX-30-091691	SS-31-091691	SS-32-091691
ARI Lab ID:	9058 BT	9058 BU	9058 BV	9058 BW	9058 BX
Date Extracted:	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed:	09/27/91	09/27/91	09/27/91	09/27/91	09/28/91
Dry Weight:	4.64g	4.70g	4.70g	4.79g	4.73g
Final volume	40ml	40ml	40ml	40ml	40ml
Dilution	1:1	1:1	1:1	1:1	1:1

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	10 U	10 U	10 U	10 U	10 U
1260	10 U	10 U	10 U	10 U	10 U

TCMX Surrogate %	131%	137%	129%	122%	109%
DCBP Surrogate %	137%	144%	138%	132%	114%

**Data Qualifiers**

Value	If the result is a value greater than or equal to the detection limit, report the value
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U	Indicates compound was analyzed for, but not detected at the given detection limit
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D	Indicates surrogate was diluted out
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**ANALYTICAL  
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INCORPORATED**

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**ORGANICS ANALYSIS DATA SHEET**  
PCB Analysis by GC/ECD

**QC Report: 9058-Dames & Moore**

**Matrix Soils**

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized *[Signature]*  
Report prepared: 10/07/91 - MAC RPI

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #	SS-33-091691	SS-34-091691	SS-35-091691	SS-36-091691	SS-37-091691
ARI Lab ID	9058 BY	9058 BZ	9058 CA	9058 CB	9058 CD
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/28/91	09/28/91	09/28/91	09/28/91	09/28/91
Dry Weight	4.57 g	4.63 g	4.73 g	4.69 g	4.75 g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	1:1	1:1	1:1	1:1	1:1

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	10 U	10 U	10 U	10 U	10 U
1260	10 U	10 U	10 U	10 U	10 U

TCMX Surrogate %	111%	110%	111%	115%	112%
DCBP Surrogate %	116%	119%	118%	123%	119%

Sample #	SS-38-091691	SS-39-091691	SS-40-091691	SSX-40-091691	SS-41-091691
ARI Lab ID	9058 CE	9058 CF	9058 CG	9058 CH	9058 CI
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/28/91	09/28/91	09/28/91	09/28/91	09/28/91
Dry Weight	4.78 g	4.64 g	4.62 g	4.70 g	4.63 g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	1:1	1:1	1:1	1:1	1:1

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	10 U	10 U	10 U	10 U	10 U
1260	10 U	10 U	10 U	10 U	10 U

TCMX Surrogate %	119%	121%	108%	121%	114%
DCBP Surrogate %	129%	131%	116%	129%	123%

**Data Qualifiers**

Value	If the result is a value greater than or equal to the detection limit, report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for, but not detected at the given detection limit
X	Indicates value above the linear range of the detector. Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector. Dilution required



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(206) 621-6490  
(206) 621-7523 (FAX)

**ORGANICS ANALYSIS DATA SHEET**  
**PCB Analysis by GC/ECD**

**QC Report 9058-Dames & Moore**

**Matrix Soils**

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91

Data Release Authorized *Peter H. Kelle*  
Report prepared 10/08/91 - MAC RPR

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #	SS-42-091691	SS-43-091691	SS-44-091691	SS-45-091691	SS-46-091691
ARI Lab ID	9058 CJ	9058 CK	9058 CL	9058 CM	9058 CN
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	09/28/91	09/28/91	09/28/91	09/28/91	09/28/91
Dry Weight	4.64 g	4.83 g	4.80 g	4.90 g	4.91 g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	11	11	11	11	11

1016/1242	10 U	10 U	10 U	10 U	10 U
1248	10 U	10 U	10 U	10 U	10 U
1254	10 U	10 U	10 U	10 U	10 U
1260	10 U	10 U	10 U	10 U	10 U

TCMX Surrogate %	113%	109%	122%	120%	116%
DCBP Surrogate %	120%	117%	130%	129%	123%

Sample #	SS-09-091591	SS-10-091591	SSX-10-091591	SS-11-091591	SS-12-091591
ARI Lab ID	9058 APdl	9058 AQdl	9058 ARdl	9058 ASdl	9058 ATdl
Date Extracted	09/21/91	09/21/91	09/21/91	09/21/91	09/21/91
Date Analyzed	10/02/91	10/02/91	10/02/91	10/02/91	10/02/91
Dry Weight	4.88 g	4.83 g	4.92 g	4.83 g	4.91 g
Final volume	40ml	40ml	40 ml	40ml	40ml
Dilution	1100	1100	1100	1100	1100

1016/1242	160 U	160 U	100 U	100 U	100 U
1248	160 U	180 U	100 U	100 U	100 U
1254	6100	5500	5300	3900	4700
1260	230 U	280 U	210 U	200 U	140 U

TCMX Surrogate %	D	D	D	D	D
DCBP Surrogate %	D	D	D	D	D

**Data Qualifiers**

Value	If the result is a value greater than or equal to the detection limit report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for, but not detected at the given detection limit
X	Indicates value above the linear range of the detector Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector Dilution required



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**ORGANICS ANALYSIS DATA SHEET**  
PCB Analysis by GC/ECD

QC Report 9058-Dames & Moore

Matrix: Soils

Date Sampled 09/14/91-09/16/91  
Date Received 09/17/91

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Seattle, WA 98109-5187  
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(206) 621-7523 (FAX)

Data Release Authorized *[Signature]*  
Report prepared 10-08-91-MAC RPI

GPC Cleanup No  
Alumina Cleanup No  
Acid Cleanup No

**Reported in ppm (mg/kg)**

Sample #:	SS-14-091591 DL	SS-15-091591 DL	SS-16-091591 DL	SS-01-091491 DL	SS-02-091491 DL
ARI Lab ID	9058 AVdl	9058 AWdl	9058 AXdl	9058 BJdl	9058 BKdl
Date Extracted	09/21/91	09/21/91	09/21/91	09/23/91	09/23/91
Date Analyzed	10/02/91	10/02/91	10/03/91	10/02/91	10/01/91
Dry Weight	4.63 g	4.67 g	4.84 g	4.66 g	4.62 g
Final volume	40 ml	40 ml	40 ml	40 ml	40 ml
Dilution	1:100	1:100	1:50	1:100	1:10

1016/1242	100 U	100 U	50 U	100 U	20 U
1248	100 U	100 U	50 U	100 U	20 U
1254	4000	3400	1200	3800	770
1260	140 U	140 U	50 U	150 U	25 U

TCMX Surrogate %	D	D	D	D	D
DCBP Surrogate %	D	D	D	D	D

Sample #:	SS-03-091491 DL	SS-04-091491 DL	SS-07-091491 DL	SS-08-091491 DL
ARI Lab ID	9058 BLdl	9058 BMdl	9058 BPdl	9058 BQdl
Date Extracted	09/23/91	09/23/91	09/23/91	09/23/91
Date Analyzed	10/02/91	10/02/91	10/01/91	10/02/91
Dry Weight	4.78 g	4.62 g	4.78 g	4.88 g
Final volume	40ml	40ml	40 ml	40ml
Dilution	1:100	1:100	1:10	1:10

1016/1242	100 U	100 U	10 U	10 U
1248	100 U	100 U	10 U	10 U
1254	2500	2200	120	590
1260	100 U	100 U	10 U	25 U

TCMX Surrogate %	D	D	D	D
DCBP Surrogate %	D	D	D	D

**Data Qualifiers**

Value	If the result is a value greater than or equal to the detection limit report the value
J	Indicates an estimated value when that value is less than the calculated detection limit
U	Indicates compound was analyzed for but not detected at the given detection limit
X	Indicates value above the linear range of the detector Dilution required
D	Indicates surrogate was diluted out
S	Indicates no value reported due to saturation of the detector Dilution required



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**WATER PCB MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY**

ARI Job No 9058

Client Dames&Moore  
Project 0061-053-005

Sample No CSDB-09-091591

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONC (mg/L)	MS CONC (mg/L)	MS % REC
1242	0.800	0.000	0.987	123

COMPOUND	SPIKE ADDED (mg/L)	MSD CONC (mg/L)	MSD % REC	% RPD
1242	0.800	0.890	111	10

Comments.



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**SOIL PCB MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY**

ARI Job No 9058

Client Dames&Moore  
Project 0061-053-005

Sample No. SSX-20-091591

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONC (mg/L)	MS CONC (mg/L)	MS % REC
1242	0.842	0.000	0.888	106

COMPOUND	SPIKE ADDED (mg/L)	MSD CONC (mg/L)	MSD % REC	% RPD
1242	0.868	0.871	100	5.8

Comments



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**ORGANICS ANALYSIS DATA SHEET**

**Volatile Analysis by Method 624/8240**

Sample ID 9058CO  
Matrix Soil/Sediment

**Sample No: SS-47-091691**

QC Report No 9058-Dames & Moore  
Project No 00681-053-005  
VTSR 09/17/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized

Report prepared 9/25/91 - MAC K kas

Date Analyzed (FINN 1) 09/24/91  
Amount analyzed 5.0 gms (Dry Wt)  
Percent Moisture 2.7

CAS Number		µg/Kg
108-90-7	Chlorobenzene	10 U

**Surrogate recoveries**

d8-Toluene	98.6%
Bromofluorobenzene	97.6%
d4-1,2-Dichloroethane	96.7%

**Data Reporting Qualifiers**

Value	If the result is a value greater than or equal to the detection limit, report the value	B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
U	Indicates compound was analyzed for but not detected at the given detection limit	K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run
J	Indicates an estimated value when result is less than specified detection limit	M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters
NR	Analysis not required		





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**ORGANICS ANALYSIS DATA SHEET**

**Volatile Analysis by Method 624/8240**

Sample ID 9058CP  
Matrix Soil/Sediment

Sample No: SS-48-091691

QC Report No 9058-Dames & Moore  
Project No 00681-053-005  
VTSR 09/17/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized *David M. Baker*  
Report prepared 9/25/91 - MAC K kas

Date Analyzed (FINN 1) 09/24/91  
Amount analyzed 4.8 gms (Dry Wt.)  
Percent Moisture 4.4

CAS Number		µg/Kg
108-90-7	Chlorobenzene	10 U

**Surrogate recoveries**

d8-Toluene	100%
Bromofluorobenzene	84.8%
d4-1,2-Dichloroethane	90.6%

**Data Reporting Qualifiers**

Value	If the result is a value greater than or equal to the detection limit, report the value	B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
U	Indicates compound was analyzed for but not detected at the given detection limit.	K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
J	Indicates an estimated value when result is less than specified detection limit.	M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.
NR	Analysis not required		



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**ORGANICS ANALYSIS DATA SHEET**


**Volatile Analysis by Method 624/8240**

Sample ID 9058CQ  
Matrix Soil/Sediment

Sample No: SS-49-091691

QC Report No 9058-Dames & Moore  
Project No 00681-053-005  
VTSR 09/17/91

333 Ninth Ave North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

Data Release Authorized   
Report prepared 9/25/91 - MAC K kas

Date Analyzed (FINN 1) 09/24/91  
Amount analyzed 4.8 gms (Dry Wt)  
Percent Moisture 7.6

CAS Number		µg/Kg
108-90-7	Chlorobenzene	10 U

**Surrogate recoveries**

d8-Toluene	109%
Bromofluorobenzene	74.7%
d4-1,2-Dichloroethane	93.5%

**Data Reporting Qualifiers**

Value If the result is a value greater than or equal to the detection limit, report the value

U Indicates compound was analyzed for but not detected at the given detection limit

J Indicates an estimated value when result is less than specified detection limit

NR Analysis not required

B This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination

K This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run

M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters



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**ORGANICS ANALYSIS DATA SHEET**

**Volatile Analysis by Method 624/8240**

Sample ID 0924MB  
Matrix Soil/Sediment

**Sample No: Method Blank**

QC Report No 9058-Dames & Moore  
Project No 00681-053-005  
VTSR 09/17/91

Data Release Authorized *Don T. DeLuca*  
Report prepared 9/25/91 - MAC K kas

Date Analyzed (FINN 1) 09/24/91  
Amount analyzed 5.0 gms (Equiv Dry Wt)  
Percent Moisture NA

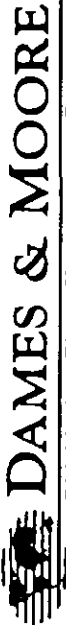
CAS Number		µg/Kg
108-90-7	Chlorobenzene	0.7 M

**Surrogate recoveries**

d8-Toluene	99.5%
Bromofluorobenzene	99.0%
d4-1,2-Dichloroethane	96.2%

**Data Reporting Qualifiers**

Value	If the result is a value greater than or equal to the detection limit, report the value	B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
U	Indicates compound was analyzed for but not detected at the given detection limit	K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run
J	Indicates an estimated value when result is less than specified detection limit	M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters
NR	Analysis not required		



# Chain of Custody

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Date 09/14/91 Page 1 of 3

Project Information				Analysis Request												Sample Receipt			
Project Number	Project Manager	Laboratory	Turn around time	Sample ID	Date	Time	Mainx	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Base/Neutral/Acids 625/8270 (GC/MS)	BTX 602/8015	Polycyclic Aromatic Hydrocarbons 610/8310	Pesticides/PCBs 608/8080	PCBs 8080	Priority Pollutant Metals (13)	EP TOX Metals (8)	Comments/ Instructions	Number of Containers
00681-053-COS	TOM HANSON	ARI		WS-01-091491	9-14-91	0910	W1P5												
				WS-02-091491		0910													
				WS-03-091491		0925													
				WS-04-091491		0925													
				WS-05-091491		0935													
				WS-06-091491		0935													
				WS-07-091491		1020													
				WS-08-091491		1035													
				WS-09-091491		1045													
				WS-10-091491		1055													
				WS-11-091491		1155													
				WSB-X1-091491		1237													
				WS-12-091491		1250													
				WSX-08-091491	9-14-91	1035	✓												
				CS-01-091491	9-14-91	1100	Core 16											0-1/2"	
				CS-02-091491	9-14-91	1100	Core 16											3-4"	
Special Instructions/Comments				Relinquished by				Received by (lab)				Sample Receipt							
				(Sig) <u>[Signature]</u>				(Sig) <u>[Signature]</u>				Total no. of containers							
				(Printed) <u>Scott J. Mickelson</u>				(Printed) <u>Kevin J. Ruiz</u>				Chain of custody seals							
				(Company) <u>DAMES &amp; MOORE</u>				(Company) <u>A.R.I.</u>				Rec'd good condition/cold							
				(Time) <u>12:00</u> (Date) <u>9/14/91</u>				(Time) <u>12:15</u> (Date) <u>9/17/91</u>				Conforms to record							
												Lab number <u>9058</u>							

A.R.I. #



# DAMES & MOORE

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## Chain of Custody

Date 9/14/91 Page 2 of 3

Project Information				Analysis Request												Sample Receipt			
Project Number	Project Manager	Laboratory	Turn around time	Sample ID	Date	Time	Matrix	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Base/Neutral/Acids 625/8270 (GC/MS)	BTX 602/8015	Polycyclic Aromatic Hydrocarbons 610/8310	Pesticides/PCBs 608/8080	PCBs 8080	Priority Pollutant Metals (13)	EP TOX Metals (8)	Comments/ Instructions	Number of Containers
CS-03-091491	9/14/91	1100	Concrete												X			6-8"	
CS-04-091491	9/14/91	1115																0-1/2"	
CS-05-091491		1115																3-4"	
CS-06-091491		1115																6-8"	
CS-07-091491		1140																0-1/2"	
CS-08-091491	9/14/91	1140	↓															1 1/2"-2"	
CS-09-091491	9/14/91	1210	Concrete												X			0-1/2"	
CS-10-091491		1210																3-4"	
CS-11-091491		1240																6-8"	
CS-12-091491		1240																0-1/2"	
CS-13-091491		1240																3-4"	
CS-14-091491	9/14/91	1240	↓															6-8"	
CS-15-091491	9/14/91	1300	Concrete												X			0-1/2"	
CS-16-091491	9/14/91	1300																3-4"	
CS-17-091491	9/14/91	1300	↓															6-8"	
Special Instructions/Comments				Relinquished by <u>[Signature]</u> (Printed) <u>SCOTT J. MCKEISER</u> (Company) <u>DAMES &amp; MOORE</u> (Time) <u>12:00</u> (Date) <u>9/17/91</u>				Received by (lab) <u>[Signature]</u> (Printed) <u>KENNY PETER</u> (Company) <u>A.E.I.</u> (Time) <u>1215</u> (Date) <u>9/17/91</u>				Sample Receipt Total no. of containers Chain of custody seals Rec'd good condition/cold Conforms to record Lab number							





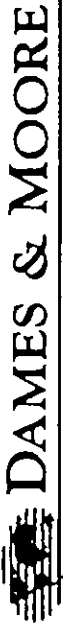
# Chain of Custody

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Date 9/15/91 Page 1 of 4

Project Information				Analysis Request										Special Instructions/Comments				Relinquished by				Received by (lab)				Sample Receipt			
Project Number	Project Manager	Laboratory	Turn around time	Sample ID	Date	Time	Matrix	Volatiles Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Base/Neutral/Acids 625/8270 (GC/MS)	BTX 602/8015	Polycyclic Aromatic Hydrocarbons 610/8310	Pesticides/PCBs 608/8080	PCBs 8080	Priority Pollutant Metals (13)	EP TOX Metals (8)	Comments/ Instructions	Number of Containers										
WS-13-091591	CSH, SJM	Tom HANSON		WS-13-091591	9-15-91	07:50	Wipe								X														
WS-14-091591	CSH, SJM	ARI		WS-14-091591	9-15-91	07:55																							
WS-15-091591	CSH, SJM	ARI		WS-15-091591	9-15-91	08:00																							
WS-16-091591	CSH, SJM	ARI		WS-16-091591	9-15-91	08:04																							
WS-17-091591	CSH, SJM	ARI		WS-17-091591	9-15-91	08:05																							
WSB-XX-091591	CSH, SJM	ARI		WSB-XX-091591	9-15-91	08:08																							
WS-18-091591	CSH, SJM	ARI		WS-18-091591	9-15-91	08:30																							
WS-19-091591	CSH, SJM	ARI		WS-19-091591	9-15-91	08:32																							
WS-20-091591	CSH, SJM	ARI		WS-20-091591	9-15-91	08:25																							
WS-21-091591	CSH, SJM	ARI		WS-21-091591	9-15-91	08:28																							
WS-22-091591	CSH, SJM	ARI		WS-22-091591	9-15-91	09:30																							
WS-23-091591	CSH, SJM	ARI		WS-23-091591	9-15-91	09:32																							
WS-24-091591	CSH, SJM	ARI		WS-24-091591	9-15-91	09:36																							
WS-25-091591	CSH, SJM	ARI		WS-25-091591	9-15-91	09:39																							
WS-26-091591	CSH, SJM	ARI		WS-26-091591	9-15-91	11:30																							
WS-27-091591	CSH, SJM	ARI		WS-27-091591	9-15-91	11:35																							

Special Instructions/Comments				Relinquished by				Received by (lab)				Sample Receipt			
				(Sig) <u>[Signature]</u>				(Sig) <u>[Signature]</u>				Total no of containers			
				(Printed) <u>Scott J. Mickelson</u>				(Printed) <u>Scott J. Mickelson</u>				Chain of custody seals			
				(Company) <u>DAMES &amp; MOORE</u>				(Company) <u>ARI</u>				Rec'd good condition/cold			
				(Time) <u>12:00</u> (Date) <u>9/17/91</u>				(Time) <u>12:15</u> (Date) <u>9/17/91</u>				Conforms to record			
												Lab number			

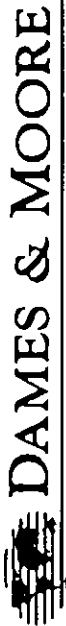


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Chain of Custody  
Date 9/15/91 Page 2 of 4

Project Number <u>00681-053-005</u> Project Manager <u>Tom HANSON</u> Laboratory <u>ARI</u> Turn around time _____				Analysis Request										Number of Containers			
Sampler's Initials <u>CH, STM</u> Sampler's Signature <u>[Signature]</u>				Volatiles Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Base/Neutral/Acids 625/8270 (GC/MS)	BTX 602/8015	Polycyclic Aromatic Hydrocarbons 610/8310	Pesticides/PCBs 608/8080	PCBs 8080	Priority Pollutant Metals (13)	EP TOX Metals (8)	Comments/ Instructions			
Sample ID	Date	Time	Matrx														
WS-27-091591	9-15-91	1145	WIPE								X						
WS-28-091591		1142															
WS-29-091591		1138															
WS-30-091591		1140															
WSK 30-091591		1140	↓														
OSDB-05-091591	9-15-91	1150	Water											Rec'd broken			
CS-20-091591	<del>0830</del>	0830	Concrete											0-1/3"			
CS-21-091591	9-15-91	0830	↓											3-4"			
CS-22-091591		0930	↓											0-1/2"			
CS-23-091591		0930	↓											3-4"			
CS-24-091591		0930	↓								↓			6-8"			
CS-25-091591	9-15-91	1400	Concrete								X			0-1/2"			
CS-26-091591	9-15-91	1400	↓								↓			3-4"			
CS-27-091591	9-15-91	1445	Concrete								X			0-1/2"			
CS-28-091591	9-15-91	1445	↓								↓			3-4"			
Special Instructions/Comments				Relinquished by (Sig) <u>[Signature]</u> (Printed) <u>Scott Mickelson</u> (Company) <u>DAMES &amp; MOORE</u> (Time) <u>12:00</u> (Date) <u>9/17/91</u>										Received by (lab) (Sig) <u>[Signature]</u> (Printed) <u>Gene P. Bue</u> (Company) <u>A.R.I.</u> (Time) <u>1215</u> (Date) <u>9/17/91</u>		Sample Receipt Total no. of containers Chain of custody seals Rec'd good condition/cool Conforms to record Lab number	

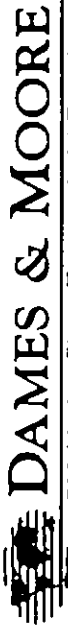




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Chain of Custody  
Date 9/15/91 Page 3 of 4

Project Information				Analysis Request										Comments/Instructions		Number of Containers					
Project Number	Project Manager	Laboratory	Turn around time	Sample ID	Date	Time	Matrx	Volatiles Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Base/Neutral/Acids 625/8270 (GC/MS)	BTX 602/8015	Polycyclic Aromatic Hydrocarbons 610/8310	Pesticides/PCBs 608/8080	Priority Pollutant Metals (13)	EP TOX Metals (8)	Comments/ Instructions	Number of Containers			
00681-053-005	TOM HANSON	ARI		SS-09-091591	9-591	0838	SOIL														
				SS-10-091591		0842															
				SSX-10-091591		0844															
				SS-11-091591		0850															
				SS-12-091591		0855															
				SS-13-091591		1038															
				SS-14-091591		1041															
				SS-15-091591		1045															
				SS-16-091591	↓	1048	↓														
				SS-17-091591	9-591	1500	SOIL														
				SS-18-091591		1505															
				SS-19-091591		1507															
				SS-20-091591		1510															
				SSX-20-091591	↓	1510	↓														
				CS-29-091591	9-591	1520	Composite										0-1/2"				
				CS-30-091591	↓	1520	↓										3-4"				
Special Instructions/Comments								Relinquished by (Sig) <u>[Signature]</u> (Printed) <u>Scott J. Mickelson</u> (Company) <u>DAMES &amp; MOORE</u> (Time) <u>12:00</u> (Date) <u>9/17/91</u>								Received by (lab) (Sig) <u>[Signature]</u> (Printed) <u>KEVIN P. 2017</u> (Company) <u>A.R.I.</u> (Time) <u>12:15</u> (Date) <u>9/17/91</u>				Sample Receipt Total no. of containers Chain of custody seals Rec'd good condition/cold Conforms to record Lab number	

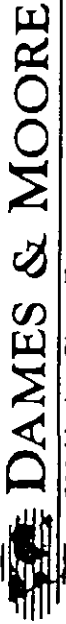


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# Chain of Custody

Date 9/15/91 Page 4 of 4

Project Number <u>02081-053-005</u>				Analysis Request										Sample Receipt							
Project Manager <u>Tom HANSON</u>														Total no. of containers							
Laboratory <u>FR J.</u>														Chain of custody seals							
Turn around time														Rec'd good condition/coil							
Sampler's Initials <u>CSH, SM</u>														Conforms to record							
Sampler's Signature <u>[Signature]</u>														Lab number							
Sample ID	Date	Time	Matrx	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Base/Neutral/Acids 625/8270 (GC/MS)	BTX 602/8015	Polycyclic Aromatic Hydrocarbons 610/8310	Pesticides/PCBs 608/8080	PCBs 8080	Priority Pollutant Metals (13)	EP TOX Metals (8)	Comments/ Instructions	Number of Containers						
CSDB-06-091591	9/15/91	1423	Water																		
CSDB-07-091591		1425																			
CSDB-08-091591		1427																			
CSDB-09-091591		1445																			
SS-21-091591	9/15/91	1555	Soil																		
SS-22-091591		1600																			
SS-23-091591		1605																			
SS-24-091591		1610																			
SS-25-091591		1640																			
SS-26-091591		1645												0.13"							
CS-31-091591	9/15/91	1635	Control											3.4"							
CS-32-091591		1635	Control																		
Special Instructions/Comments				Relinquished by (Sig) <u>[Signature]</u> (Printed) <u>Scott J. Mickelson</u> (Company) <u>DAMES &amp; MOORE</u> (Time) <u>12:00</u> (Date) <u>9/17/91</u>										Received by (lab) (Sig) <u>[Signature]</u> (Printed) <u>KEVIN P. RUIZ</u> (Company) <u>A. P. I.</u> (Time) <u>1215</u> (Date) <u>9/17/91</u>				Sample Receipt			



# Chain of Custody

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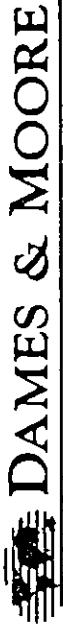
Project Information				Analysis Request										Sample Receipt				
Project Number	Project Manager	Laboratory	Turn around time	Sample ID	Date	Time	Matrix	Volatiles Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Base/Neutral/Acids 625/8270 (GC/MS)	BTX 602/8015	Polycyclic Aromatic Hydrocarbons 610/8310	Pesticides/PCBs 608/8080	Priority Pollutant Metals (13)	EP TOX Metals (8)	Comments/ Instructions	Number of Containers
00681-053-005	Don HANSON	ARI		SS-27-091691	9-16-91	1300	Soil											
				SS-28-091691		1323												
				SS-29-091691		1325												
				SS-30-091691		1330												
				SSX-30-091691		1330												
				SS-31-091691		1344												
				SS-32-091691		1346												
				SS-33-091691		1348												
				SS-34-091691		1350												
				SS-35-091691		1356												
				SS-36-091691		1358												
				SS-37-091691		1400												
				SS-38-091691		1402												
				SS-39-091691		1432												
				SS-40-091691		1434												
				SSX-40-091691		1434												

Special Instructions/Comments	Relinquished by	Received by (lab)
	(Sig) <u>[Signature]</u> (Printed) <u>Scott J Mickelson</u> (Company) <u>Dames &amp; Moore</u> (Time) <u>12:00</u> (Date) <u>9/17/91</u>	(Sig) <u>[Signature]</u> (Printed) <u>Kevin P. Perez</u> (Company) <u>A.R.I.</u> (Time) <u>12:15</u> (Date) <u>9/17/91</u>

Sample Receipt
Total no. of containers
Chain of custody seals
Rec'd good condition/cold
Conforms to record
Lab number



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# Chain of Custody

Date 9/16/91 Page 2 of 2

Project Information				Analysis Request												Sample Receipt				
Project Number	Project Manager	Laboratory	Turn around time	Sample ID	Date	Time	Matrix	Volatile Organics 624/8240 (GC/MS)	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020	Base/Neutral/Acids 625/8270 (GC/MS)	BTX 602/8015	Polycyclic Aromatic Hydrocarbons 610/8310	Pesticides/PCBs 608/8080	PCBs 8080	Chlorobenzene	Priority Pollutant Metals (13)	EP TOX Metals (8)	Comments/ Instructions	Number of Containers
SS-41-091691	9/16/91	1436	SOIL																	
SS-42-091691	9/16/91	1438																		
SS-43-091691	9/16/91	1500																		
SS-44-091691	9/16/91	1502																		
SS-45-091691	9/16/91	1504																		
SS-46-091691	9/16/91	1506																		
SS-47-091691	9/16/91	1500																		
SS-48-091691	9/16/91	1518																		
SS-49-091691	9/16/91	1520	↓																	
Special Instructions/Comments				Relinquished by				Received by (lab)				Sample Receipt								
				(Sig) <u>[Signature]</u>				(Sig) <u>[Signature]</u>				Total no. of containers								
				(Printed) <u>Scott J. Mickelson</u>				(Printed) <u>Kevin P. [Signature]</u>				Chain of custody seals								
				(Company) <u>DAMES &amp; MOORE</u>				(Company) <u>A.R.I.</u>				Rec'd good condition/cold								
				(Time) <u>12:00</u> (Date) <u>9/17/91</u>				(Time) <u>1215</u> (Date) <u>9/17/91</u>				Conforms to record								
												Lab number								

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**FINAL REMEDIAL ACTION CLOSURE PLAN  
TERRY-LANDER HALL  
UNIVERSITY OF WASHINGTON**

**For**

**UNIVERSITY OF WASHINGTON  
SEATTLE, WASHINGTON**

**February 13, 1995  
D&M Job No. 00681-062-163**



**DAMES & MOORE**

**DRAFT REMEDIAL ACTION CLOSURE PLAN  
TERRY-LANDER HALL  
UNIVERSITY OF WASHINGTON  
SEATTLE, WASHINGTON**

**EXECUTIVE SUMMARY**

This report presents the results of a remedial action of structures affected by polychlorinated biphenyls (PCBs) associated with an electrical transformer vault in the mechanical room at Terry-Lander Hall, located at the University of Washington in Seattle, Washington. In 1968, a transformer was reportedly dropped during installation in the mechanical room, which resulted in a release of an unknown quantity of transformer fluid containing PCBs onto the vault room floor. University of Washington personnel who were present at the time of the spill report that approximately one-half of an inch of liquid accumulated on the vault floor. The free liquid was reportedly removed immediately. Additional steps taken to decontaminate the vault could not be verified. The spill was reported to the National Response Center (NRC) by the University of Washington on July 10, 1992.

Site characterizations were conducted in the transformer vault between 1990 and 1992 to determine the nature and extent of PCB contaminated material resulting from the 1968 spill. The results indicated that PCBs were present at elevated levels in surface wipe, concrete, wall, expansion strip and soil samples in the interior structure of the transformer vault and on floor surfaces in the mechanical room and basement. The transformer and switchgear also contained elevated PCB concentrations.

Remedial activities were completed at the Terry-Lander Hall between June and October 1994 and included (1) washing and rinsing concrete surfaces and electrical equipment; (2) removal, disposal, and/or replacement of the transformer and appurtenances containing PCBs, (3) removing concrete surfaces to depths between 1/8-inch to three feet by jack hammer or diamond abrasive grinding followed by encapsulation, (4) confirmation wipe sampling and analysis during and following removal or decontamination activities, and (5) waste disposal.

PCB containing materials such as electrical equipment, interior and exterior concrete floor and wall surfaces, and other appurtenances have been removed, disposed and/or successfully encapsulated.

Soils containing PCB concentrations above 25 ppm are present in limited areas beneath the concrete floor of the transformer vault room to an approximate depth of 18 inches below ground surface (bgs). Removal of the affected soils beneath the concrete floor would jeopardize the structural integrity of the transformer vault, therefore, the soil was left in place. There is a low potential for future migration of the residual PCBs in soil. The soils are not currently saturated and the overlying concrete floors in the mechanical room and floors, walls, and expansion joint in the vault room were remediated by scabbling and/or removal of the contaminated surfaces and subsequent encapsulation of these remediated surfaces by utilizing an epoxy based paint and joint sealant on the remediated areas which are specially formulated to resist water penetration. This moisture-insensitive epoxy based paint and joint compound will prevent the mobilization of PCB's in respective mechanical and vault room surfaces. It is unlikely that the residual

PCB's will impact groundwater in the future due to the high affinity for PCBs to be retained on the soil particles and existing data which suggests that the depth to groundwater is greater than 15 feet beneath the site

Institutional controls are recommended to maintain the integrity of the concrete floor and wall encapsulations and to restrict public access.

The remedial action is considered to be protective of human health and the environment, therefore, no further action is recommended

◆ ◆ ◆

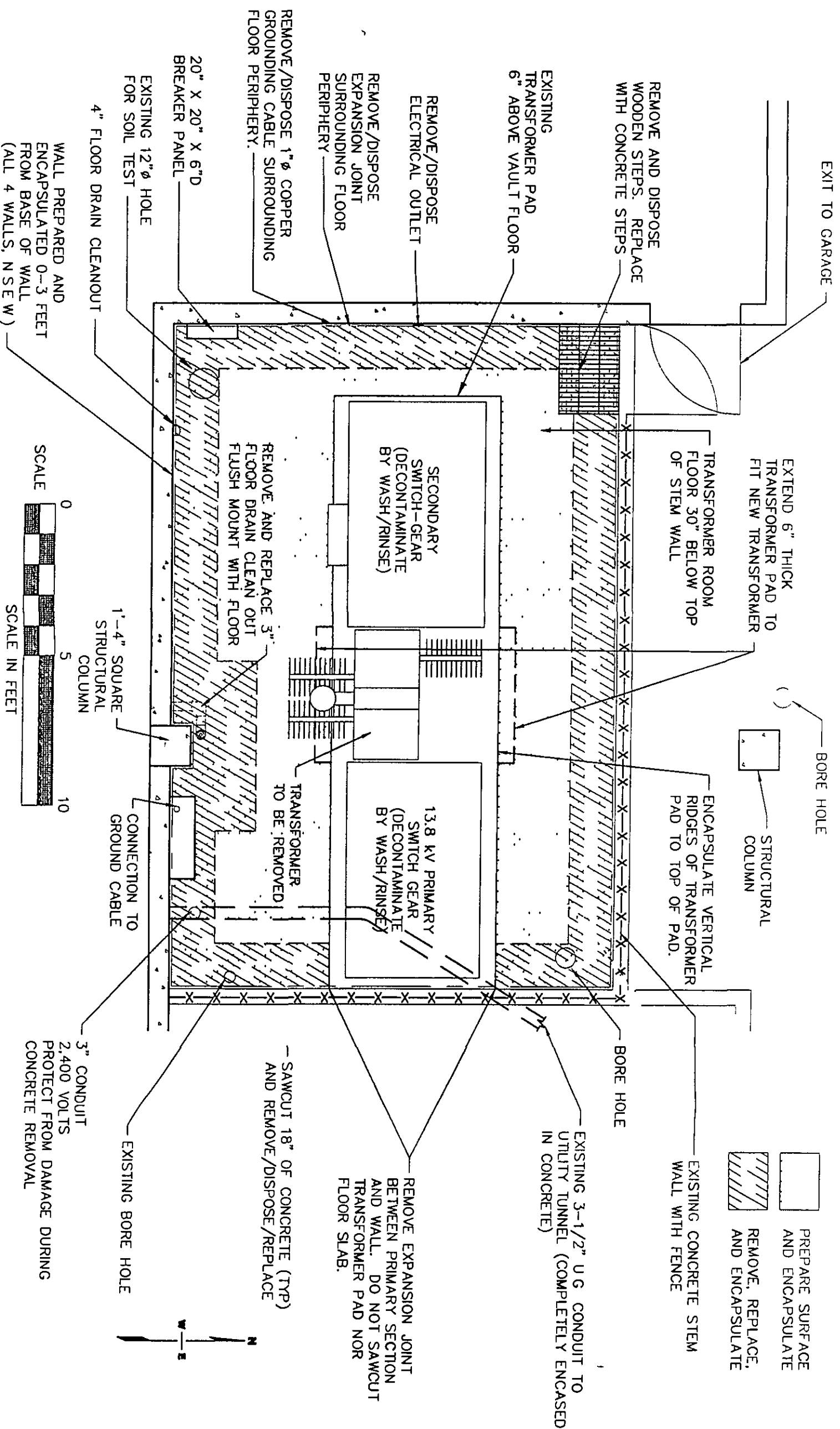


FIGURE 6

Job No. 00681-062-163



Dames & Moore

Transformer Area Floor Plan  
Terry-Lander Dormitory PCB Remediation  
University of Washington